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CARCINOMATOUS GASTRIC ULCER MISLEADING RESULTS OF MEDICAL THERAPY

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It is apparent that the rank and file of the medical profession are becoming increasingly conscious of the fact that small, circumscribed, innocent looking ulcerous gastric lesions may actually be carcinomatous. Progress in our knowledge in this respect so far is due largely to disclosures by roentgenoscopy and the unexpected results of microscopic examination of presumably benign excised lesions or lesions in resected portions of the stomach.

From time to time a patient who has what is proved eventually to be a malignant circumscribed gastric lesion undergoes treatment for the usual chronic benign ulcer. There are extenuating reasons for this, because an ulcerating form of carcinoma may be indistinguishable from a benign one on the basis of the usual criteria. Moreover, the patient may refuse immediate operation irrespective of the probable nature of the lesion. Finally, the risk of the operation under certain circumstances may be greater on first blush than the risk of death from carcinoma. While any unnecessary delay in the proper treatment of a malignant growth always is to be deplored, there is the advantage of learning something of the behavior of such lesions under an intensive medical regimen.

While a considerable literature bearing on the differential diagnosis of carcinomatous and benign ulceration has accumulated, insufficient stress has been placed on the diagnostic significance of the response to medical treatment. In my judgment the roentgenologist and the surgeon have been particularly remiss in this respect. The circumspect physician is today as much concerned with the degree of demonstrable anatomic change in an ulcer undergoing treatment as with the symptomatic improvement. In fact, he has not placed too much credence on the latter for some years because he realizes that disturbances arising from gastric carcinomas of all types can be relieved temporarily in a disconcertingly large number. He may also be aware of the fact that in an average of almost a third of all verified cases of gastric carcinoma an ulcer type of complaint may be the initial or predominating one. And with much justification he regards the complete and fairly prompt disappearance of all roentgenographic evidence of a lesion and of the symptoms as trustworthy and almost absolute proof of benignancy.

However, before any hard and fast rules can be laid down, authoritative observations must be made on a number of histologically verified cases sufficiently large to be of statistical value. This applies to the effect of adequate treatment, not only on benign but on carcinomatous lesions as well. With respect to the former, we are treading on more familiar ground. Uncomplicated subacute ulcers and chronic ulcers not of too long duration usually heal without difficulty, although the latter may recur eventually. But incomplete healing of a benign ulcer due to one of the various well recognized factors obviously can give rise to difficulties in differential diagnosis. Suffice it to say that the failure of the niche to disappear completely after an adequate course of intensive treatment does not imply necessarily that the lesion is carcinomatous. Infrequently even an uncomplicated ulcer may undergo complete healing, with persistence of a niche, as shown by Unger and Poppel.¹ That this phenomenon does not occur oftener has frequently puzzled me when recalling that the bulbar deformity caused by chronic duodenal ulcers will persist almost invariably after such ulcers are healed completely and permanently. Undoubtedly the most reliable evidence as to the extent of healing of a gastric lesion is afforded by the gastroscopic examination. Our experience in this respect supports the contentions of Templeton and Schindler² and others that an ulcer still may be active and unhealed even though there is complete disappearance of the niche from a roentgenologic point of view.

Judging from past published reports, the large majority of carcinomatous ulcers or ulcerating carcinomas decrease little in size, if at all, under the influence of medical treatment. Some actually have been known to increase in size. Whether this is true of the earliest preinvasive types of carcinoma, so-called carcinoma *in situ*, especially those associated with hydrochloric acid in the gastric contents, remains to be seen. Taylor,³ on the basis of repeated gastroscopic observations, expressed the conviction that the failure of an ulcer to change at all after three weeks of intensive treatment in the hospital is sufficient evidence of malignancy. On the other hand, if on the second examination an ulcer shows signs of uniform healing, he took the attitude that malignancy can be definitely excluded. Gutmann⁴ expressed the opinion that any lesion in which there is a persistence of clinical and radiologic signs after six weeks of treatment is suggestive of carcinoma. He regarded the presence of cancer as practically certain when

1. Unger, A. S., and Poppel, M. H.: Healing of Gastric Ulcer with Persistence of Niche Roentgenographically, *Am. J. Roentgenol.* **39**: 592-595 (April) 1938.

2. Templeton, F. E., and Schindler, Rudolf: Roentgenologic and Gastroscopic Studies in Chronic Gastritis and Peptic Ulcer, *Am. J. Roentgenol.* **41**: 354-367 (March) 1939.

3. Taylor, Hermon: Practical Evaluation of Gastroscopy, *Lancet* **1**: 131-135 (Feb. 1) 1941.

4. Gutmann, R. A.: Ulcères bénins, ulcères transformés et cancers ulcérimorphes, *Gastroenterologia* **64**: 259-263 (Nov.) 1939.

From the Division of Medicine, Mayo Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

there are a persistence of clinical symptoms and the increase of roentgenologic signs, and as definite for carcinoma disappearance of the clinical symptoms with progressive increase of the roentgenologic signs. Mallory⁵ made observations on 4 cases of early ulcerous gastric carcinoma in which there was definite diminution in the size of the crater. In the first case, in which there was an ulcer in the prepyloric region, the niche itself had disappeared completely on roentgenologic examination after eight weeks of treatment.

The subject is one of considerable significance because a fifth of all the carcinomatous lesions removed at the Mayo Clinic in recent years may be within the size range of benign ulcer (4 cm. or less in diameter). As only 6.5 per cent were small (2.5 cm. or less) MacCarty⁶ felt that gastric carcinoma was not being diagnosed early.

While repeated experience in the past has taught me that a carcinomatous form of ulcer may undergo little objective change, if any, while under treatment, the improvement at other times, especially during the earlier



Fig. 1 (case 3).—a, large "penetrating" gastric ulcer, posterior wall, near lesser curvature, above incisura angularis; b, shallow ulcerating lesion at the original site; c, shallow ulcer, 2 cm. in diameter, at the original site.

stages of the lesion, can be so striking as to be misleading. The following cases, of which case 1⁷ and case 3⁸ have been reported previously, with illustrations, are indicative of this:

REPORT OF CASES

CASE 1.—A white man aged 27, who entered the Mayo Clinic on Nov. 10, 1931, for five years previously, usually late in the summer and in early spring, had experienced "spells" of indigestion lasting one to four months, with intervals of complete freedom. Two years prior to admission here he had had a severe attack during an exacerbation, strongly suggestive of a subacute "protected" perforation. On his own volition he drank milk at frequent intervals, and as a result there was considerable improvement. For nine months before he came under our observation the pain had been replaced by distress of the type of gaseous distention.

Physical examination and routine laboratory investigations were without incident. Concentration of free hydrochloric acid after an Ewald type of meal was 38. Roentgenologic examina-

tion, made Nov. 11, 1931, gave evidence of a perforating ulcer on the lesser curvature of the stomach, above the incisura angularis. A smaller one was also present just above that. After a course of intensive treatment for ulcer in the hospital, roentgen examination on Dec. 2, 1931, disclosed a complete disappearance of both lesions.

The patient was asked to return here for examination within three months but did not do so until Oct. 3, 1932, seven months after the time when he should have returned. In the meantime he had experienced the seasonal exacerbations as before. Relief by the taking of food or alkalis was less marked. He had lost 16 pounds (7.3 Kg.). Roentgen examination on Oct. 4, 1932 disclosed a large perforating ulcer on the lesser curvature, possibly a carcinoma, with a smaller ulcer just below it.

At operation on Oct. 13, 1932, a mass was found, the size of a fist, involving the middle and upper thirds of the stomach, with extensive posterior infiltration. Regional lymph nodes were enlarged. There seemed to be a 90 per cent chance that the growth was a carcinoma. The abdomen was closed after exploration only. Roentgen therapy was instituted. Progressive decline followed, with pain, ileus, vomiting and eventually signs of generalized peritonitis. The patient died on Feb. 4, 1933. At necropsy a large, ulcerating carcinoma of the stomach, with generalized peritonitis, was found.

Features of interest are the comparative youth of the patient, the association of a painful, chronic, perforated benign ulcer with a carcinoma in situ, and complete, even though temporary, disappearance of both lesions, from a roentgenographic standpoint, after treatment.

CASE 2.—A white man aged 30, who entered the Mayo Clinic on Feb. 6, 1940, had always had a "weak stomach" and was an "easy vomiter." His mother "suffered from a peptic ulcer" for a number of years but died of cancer of the stomach at the age of 45 years. Since 1934 the patient had had ulcer-like manifestations, much belching and resulting gaseous distention. In June 1935 an ulcer, apparently on the lesser curvature in the prepyloric region, was found on roentgen examination. After three weeks of intensive treatment the lesion had disappeared completely on reexamination. In October 1936 there was a recurrence of the original symptoms, characterized by epigastric pain appearing one hour after each meal, which appeared to be relieved more or less completely by food and alkalis. Roentgen examination in December 1936 disclosed only antral spasm. Because of incomplete relief by treatment, operation was advised in March 1937. On exploration of the stomach an ulcer was not found but pyloroplasty was done.

Since this operation the patient has been free of his former ulcer-like discomfort, but for a year and a half prior to entering the clinic he had had much gaseous distention, nausea and vomiting, the latter sometimes of retention character, and a loss of weight. In February 1939 analysis of gastric contents after stimulation with histamine revealed a total acidity of 106 and free hydrochloric acid of 88 clinical units.

The positive findings obtained on admission were moderate anemia, alkalemia and an ulcerating lesion in the distal third of the stomach with pyloric obstruction on roentgen examination. An analysis of 350 cc. of vomited material disclosed considerable altered blood and on titration free hydrochloric acid of 30 units. At operation on Feb. 10, 1940 an annular ulcerated colloid adenocarcinoma (8 by 7 by 2 cm.), grade 4 (Broders' method), beginning just above the pylorus and completely encircling it, was removed. The overlying serosa and regional lymph nodes were involved.

The prepyloric location of the lesion in spite of the comparative youth of the patient and the history of gastric carcinoma in the patient's mother were significant. One can only speculate as to what relation the original lesion, which disappeared under treatment, bore to the ultimate extensive one.

CASE 3.—A white woman aged 44, married, entered the hospital directly on July 23, 1939 because of recent hematemesis of moderate severity. For a period of four years the patient

5. Mallory, T. B.: Carcinoma in Situ of the Stomach and Its Bearing on the Histogenesis of Malignant Ulcers, *Arch. Path.* 30: 348-362 (July) 1940.

6. MacCarty, W. C.: Early Cancer of the Stomach and Its Clinical Significance, *Am. J. Digest. Dis.* 5: 549-554 (Nov.) 1938.

7. Rivers, A. B., and Dry, T. J.: Differentiation of Benign and Malignant Gastric Ulcers: Unreliability of Diagnostic Criteria, *Arch. Surg.* 30: 702-715 (April) 1935. Eusterman, G. B., and Balfour, D. C.: The Stomach and Duodenum, Philadelphia, W. B. Saunders Company, 1935, p. 580.

8. Eusterman, G. B.: Small Carcinomatous Gastric Lesions Simulating Chronic Benign Ulcer: Present Status of Differential Diagnosis and Treatment, *Minnesota Med.* 23: 703-709 (Oct.) 1940.

had had indigestion, remittent in course but progressive in severity. This was characterized by a low retrosternal pain appearing a half to one hour after each meal, often extending laterally to the left hypochondrium or posteriorly to the left subscapular region. The duration of the pain was usually an hour or two. Ingestion of warm fluids or alkaline mixtures, or induced vomiting, afforded relief rather uniformly. Roentgenoscopy in December 1937 at the patient's home by a competent roentgenologist disclosed an ulcer "quite high up in the stomach and on the posterior wall." After this examination the patient entered the hospital in her home town and submitted to treatment for ulcer for a period of five weeks. Then she enjoyed good health until March 1939, at which time there was a recurrence of her original symptoms in aggravated form, precipitated by emotional and physical stress. Four days prior to admission here the roentgenologist again confirmed the presence of the original lesion without any significant changes. The physical examination and routine laboratory investigations were without special incident. The positive findings on July 29, 1939 were moderate low grade hypochromic microcytic anemia and the presence of a large "penetrating" ulcer on the posterior wall of the stomach near the lesser curvature above the incisura angularis (fig. 1 a). Analysis of the gastric contents (Ewald) disclosed a total acidity of 46 and free hydrochloric acid of 26 clinical units, as well as the presence of considerable altered blood. The total aspirated contents measured 160 cc.

Intensive treatment for ulcer was instituted promptly. This treatment, however, was interrupted for two weeks during August because of an intervening obscure illness characterized

ing home. Roentgenoscopy at this time revealed a small shallow defect with evidence of considerable scarring and puckering of the contiguous mucosa. On gastroscopy a small ulcer on the posterior wall, just above the incisura angularis, corresponding to the site of the lesion on roentgen examination, was seen. The margin of the ulcer appeared to be quite edematous but the lesion in its major aspects appeared to be benign.



Fig. 3 (case 3).—Ulcerating adenocarcinoma, for the most part, in situ. However, there is invasion of submucosa at one point. The muscle plane is intact. (Broders.)

After another two week period of treatment, roentgen examination on Dec. 23, 1939 disclosed a shallow ulcerating lesion at the original site (fig. 1 b). A second gastroscopy on Jan. 9, 1940 did not reveal any evidence of ulceration at this time. The gastric mucosa was scarred and puckered and there was an "area of gastritis" at the site of the previous lesion. Four days later roentgen examination revealed a shallow defect about 2 cm. in diameter at the site of the original lesion, with deformity of the surrounding gastric rugae.

On April 12, 1940 the patient again reported, as requested, for examination. She had experienced a mild recurrence of trouble for several days during the previous month as the result of emotional strain. Roentgen examination the following day disclosed findings identical with those at the last examination in January (fig. 1 c), but on gastroscopy there was present a fairly deep ulcerating lesion the crater of which was about 1 cm. in diameter. The ulcer was irregular in contour, the border had a rolled appearance and the base was covered with a shaggy exudate. The mucosa near the incisura angularis was decidedly edematous, and several submucosal hemorrhages were seen in this area. On April 18, 1940 partial gastrectomy of the posterior Polya type was performed by Dr. Walters. The lesion proved to be an ulcerating adenocarcinoma (2 by 1.5 cm.), grade 3 (figs 2 and 3). It had invaded the submucosa but had not involved the musculature. There were associated gastritis and very early glandular involvement. A good recovery was made and the patient was enjoying good health at the time this paper was written.

Note again the evidence of almost complete healing, both from a roentgenologic and from a gastroscopic point of view. The location of the lesion on the posterior wall is significant. Can one attribute the symptoms present for a total of five years to carcinoma, or is this an example of the malignant transformation of a benign ulcer? While absolute proof is lacking, I am of the opinion that the lesion was carcinomatous from the outset, as the muscle plane was intact.

CASE 4.—A man aged 68 came to the Mayo Clinic on March 21, 1938 because of stomach trouble. In 1923 and 1928 he had experienced brief periods of gastric distress coincident with unusual nervous and physical strain. This distress, which was characterized by gas and hunger pain, was situated in the epigastrium and appeared about two hours after each meal. On relief from occupational stress the symptoms promptly dis-



Fig. 2 (case 3).—Grade 3 adenocarcinoma in which the cells have spherical and irregular hyperchromatic nuclei, with a little tendency to acinar formation.

by fever, headache, peripheral neuritis, purpura, nausea, vomiting, icterus and leukopenia. The guaiac reaction for occult blood in the feces was intermittently positive and the benzdine reaction was usually positive throughout the period in the hospital. Roentgen examinations on Aug. 6 and Sept. 1, 1939 showed that the lesion had decreased considerably in size.

At our request the patient returned here for another examination on Dec. 8, 1939, although she not only had been free from symptoms but had gained 8 pounds (3.6 Kg.) since return-

appeared. The present illness began about three months prior to the patient's admission to the clinic, during the Christmas holiday (December 1937). Epigastric distress appeared about one hour after each meal and persisted for several hours. Alkalis or milk afforded relief. There was no impairment of weight, appetite or strength. In February 1938 a gastric ulcer was diagnosed after roentgen examination. Ambulant treatment for ulcer was instituted promptly and the symptoms disappeared. Because there was not a proportionate improvement in the roentgenographic appearance of the lesion, the patient was referred to the clinic for an opinion.

The general physical examination gave satisfactory results. The patient was short, stocky and well nourished. Analysis of gastric contents after an Ewald meal revealed a total acidity of 32 clinical units and free hydrochloric acid 20. The total contents removed measured 125 cc. Roentgen examination on March 28, 1938 revealed a shallow ulcer on the lesser curvature just below the incisura angularis. The presence of the ulcer was confirmed by gastroscopy three days later. The gastroscopic appearance was that of a small benign lesion on the lesser curvature and anterior wall distal to the incisura angularis.

The patient was hospitalized and underwent intensive treatment for more than a month. Roentgen examination was repeated April 18, 1938, but this failed to disclose any sign of the ulcer. On gastroscopy, July 7, 1938, the original ulcer had disappeared completely. Roentgen examination on Sept. 14, 1938 again revealed normal conditions. The patient had experienced none of his previous distress in the meantime. However, he was asked to return periodically for reexamination on account of his advanced age and the recent onset of the symptoms. On Jan. 17, 1939 there was roentgenographic evidence of a recurrence of the ulcerating lesion. Two days later gastroscopy revealed the lesion as depicted on the film. It was situated at the original site and appeared to be fairly well circumscribed, somewhat indurated and 2 cm. in diameter. On June 25, 1939 partial gastrectomy was performed.

The pathologic findings were as follows: An ulcerating colloid carcinoma, grade 3, measuring 2 by 2 by 1 cm., was situated on the anterior wall and lesser curvature of the stomach, 3 cm. above the pyloric ring. The serosal surface of the stomach immediately underlying the ulcer showed carcinomatous lymphangitis. No involvement of the lymph nodes was found.

The patient was examined again on Feb. 13, 1940 and appeared to be in excellent health. At the present writing he has no disturbances of any kind and appears to be enjoying good health.

This is a most striking example of the disappearance of all symptoms and signs of early gastric carcinoma from both the roentgenologic and gastroscopic point of view after treatment. It was largely because of the late appearance of the lesion at an advanced age that we felt close surveillance necessary in the ultimate interests of the patient. Such apprehension was justified by the course of events.

That other physicians have had similar experiences to our own is attested by the following case:

CASE 5.—A white man aged 59, who entered the Mayo Clinic Feb. 3, 1941, for fifteen years had experienced intermittently "mild heartburn" appearing an hour and a half after meals, which was relieved regularly by sodium bicarbonate. After an attack of syncope and melena in February 1939, examination elsewhere by competent observers disclosed the presence of an ulcer with a large crater on the posterior wall of the stomach. He underwent intensive treatment, and roentgen examination in May 1939 showed that all signs of the lesion had disappeared. The patient was also entirely free from symptoms. After a brief episode of moderately severe epigastric pain, which extended posteriorly, and vomiting, in August 1940 examination disclosed that the original lesion had recurred. Under a second course of intensive treatment the ulcer gradually decreased in size so that by Nov. 1, 1940 it was barely visible on roentgen examination.

Three weeks prior to admission here the symptoms were characterized by progressive decrease in gastric capacity and appetite, without appreciable loss of weight, or pain. A burning discomfort was present when the stomach was empty.

Physical examination disclosed an extensive mass in the right portion of the epigastrium, and gastric analysis showed the presence of free hydrochloric acid. Roentgen examination disclosed the presence of an extensive defect involving the lower two thirds of the stomach. At operation on Feb. 8, 1941 a huge inoperable carcinoma involving practically the entire stomach was found. There was extragastric extension into the gastrohepatic omentum, and the growth extended upward nearly to the insertion of the esophagus.

Note the large size of the crater as well as the posterior location of the original lesion, features which not only justify a healthy suspicion of carcinoma but prompt surgical intervention.

It is apparent that gastric carcinoma not only may masquerade successfully as benign ulcer but may react to treatment in similar fashion as well. In this article I have particularly tried to avoid the highly controversial subject of the causal relation of chronic benign ulcer to carcinoma. In the light of present knowledge the problem remains an insoluble one. All types of gastric cancer are notoriously prone to ulceration, the process ranging from superficial erosion to deep crateriform formation and frequently even to the extent of causing perforation. Such process has been attributed ordinarily to infection or interference with the blood supply. As regards the stomach, the factor of peptic ulceration in the presence of free acid has been given serious consideration for years by several German observers. Their views have found a recent champion in Mallory on the basis of histologic and clinical evidence and the nature of the response to treatment. The rather prompt diminution in the size of the crater and even its actual disappearance can be attributed in all probability to two factors: first, the reparative effect of treatment on secondary peptic ulceration of cancerous tissue identical with that which obtains in benign ulcer and, second, the filling in of the base of the ulcer by cancerous tissue. The latter factor was also pointed out by Rigler.⁹ In Mallory's third case "the former ulcer crater was completely filled with carcinoma *in situ*."

The evidence already at our disposal seems to justify close scrutiny of all gastric lesions undergoing medical treatment, no matter how favorable the response, if the slightest suspicion of carcinoma exists. Such suspicion is especially justifiable under the following circumstances: location of the lesion in the prepyloric first inch, posterior wall or greater curvature, large size, consistent achlorhydria after stimulation with histamine, persistent or frequent recurrence of occult blood in the feces during treatment, late onset in an elderly person, and reduced gastric acidity and secretory volume estimated under basal conditions, especially in association with early pyloric obstruction. All patients submitted to treatment should undergo routine examination at intervals of three months for at least a year and at intervals of six months thereafter for an additional period of twelve to eighteen months.

CONCLUSIONS

Small ulcerating forms of gastric carcinoma not only may be clinically indistinguishable at times from chronic benign ulcer but may respond to medical treatment so

9. Rigler, L. G.: The Roentgen Diagnosis of Small Carcinomata of the Stomach, Wisconsin M. J. 34:236-241 (April) 1935.

favorably as to give a wrong impression of their true nature. Such response seems especially characteristic of carcinoma *in situ*.

The real and apparent favorable reactions to treatment of early carcinomatous ulcers are attributed, respectively, to the effect of such treatment on secondary peptic ulceration of cancerous tissue and to the filling in of the base of the ulcer with the latter.

The rate and extent of healing of an ulcerous gastric lesion undergoing adequate treatment are of primary importance in differential diagnosis. However, all treated patients should be submitted to periodic reexamination irrespective of how favorable the response. Such follow-up is particularly imperative in the presence of lesions with the clinical features which have been discussed.

BLEEDING PEPTIC ULCER

CLINICAL APPRAISAL OF VARIOUS METHODS OF TREATMENT BASED ON A SERIES OF 408 CASES

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The methods advocated in the treatment of massive hemorrhage from peptic ulcer have basically followed four general plans: (1) initial fasting and dietary restriction, (2) immediate feeding, (3) intubation and (4) surgery. Varied mortality percentages have been reported not only for the different methods but with the same procedures. Although these variations may be due to differences in the type of case encountered, nevertheless there is confusion as to the best therapeutic approach in bleeding peptic ulcer. The most commonly employed method has been the restricted dietetic regimen, based on the theory that an initial fasting period of variable duration followed by a diet of the Sippy type aids in healing the ulcer and prevents recurrence of bleeding by resting the stomach and neutralizing the acidity. The mortality with this method has ranged from 4.2 per cent in 94 cases¹ to 25 per cent in 191 cases.² The immediate feeding plan was first advocated in 1904 by Lenhartz,³ who gave milk and eggs from the day of admission and scraped beef on the sixth day. He claimed that anemia and depletion were more readily overcome and that recovery was more rapid. His mortality rate was 2.1 per cent in 146 cases.⁴ Andresen⁵ advised the immediate feeding of gelatin mixtures and withheld venoclyses and transfusions during the initial period. He reported a mortality of 2.5 per cent in 120 cases.⁶ LaDue⁷ treated 79 patients with Andresen's diet and had a mortality of 6.3 per cent, including 2 patients who received parenteral fluids

and succumbed. In 1933 Meulengracht⁸ advocated a liberal puréed vegetable and minced meat diet from the day of admission. His mortality rate was 2 per cent in 491 cases.⁹ In this country the mortality percentages with this method had been reported as 0 in 15 cases,¹⁰ 5.3 in 133 cases¹¹ and 8.6 in 23 cases.¹² Duodenal intubation was suggested by Einhorn¹³ in 1920. By this method he gave a liberal diet beyond the ulcer area, at times introducing the tube within six to twelve hours after admission.¹⁴ In 1925 one of us¹⁵ reported a series of 40 cases treated with duodenal alimentation without a fatality. Soper¹⁶ used a nasal retention catheter, at first lavaging the stomach and then giving duodenal feedings. Woldman¹⁷ gave a continuous colloidal aluminum hydroxide drip through a nasogastric tube inserted just beyond the cardia and permitted a bland diet by mouth. His mortality rate was 2 per cent in 144 cases. Surgical intervention has been attended by a mortality rate ranging from 5 to 30 per cent. Finsterer¹⁸ advised immediate resection in acute hemorrhage, while Gordon-Taylor,¹⁹ Allen and Welch²⁰ and Hinton²¹ advocated surgical intervention in selected cases, and Blackford and Williams²² urged prompt surgery in the older age group.

In an attempt to evaluate some of the methods employed, a series of 408 patients with bleeding peptic ulcer, treated in the various divisions of two hospitals from 1927 to April 1941, was studied. They comprised ward as well as private patients. Three hundred and forty-five were males and 63 were females. The youngest was 12 years of age and the oldest 86 years. Three were Negroes. Two hundred and seventy were under 50 years of age; of these 13 died, a mortality of 4.8 per cent. One hundred and thirty-eight patients were 50 years of age or over; of these, 23 died, a mortality of 16.6 per cent. In 18 of the 408 cases, or 4.4 per cent, hemorrhage was the sole cause of death. In 18 other cases, or 4.4 per cent, complicating diseases contributed to the fatalities. The total mortality for the series was 8.8 per cent. In table 1 the age and sex distribution and mortality have been outlined by decades.

A duodenal ulcer was demonstrated in 287 cases, a gastric ulcer in 55, both gastric and duodenal ulcers in 6, a marginal ulcer in 18, and both a marginal and a duodenal ulcer in 1. In 22 cases the radiologic examination after the hemorrhage was negative, but a sub-

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12. Crohn, B. B., and Lerner, H. H.: Gross Hemorrhage as a Complication of Peptic Ulcer, *Am. J. Digest. Dis.* 6: 15 (March) 1939.

13. Einhorn, Max: The Duodenal Tube, ed. 1, Philadelphia, W. B. Saunders Company, 1920, p. 71.

14. Einhorn, Max: Management of Acute Hemorrhages in Peptic Ulcers, *M. J. & Rec.* 135: 219 (March 2) 1932.

15. Rafsky, H. A.: The Treatment of Gastric Hemorrhage in Peptic Ulcer, *Internat. J. Med. & Surg.* 38: 8, 1925.

16. Soper, H. W.: The Treatment of Hematemesis by the Retention Catheter, *J. A. M. A.* 97: 771 (Sept. 12) 1931.

17. Woldman, E. E.: The Treatment of Massive Gastrointestinal Hemorrhage by the Continuous Administration of Colloidal Aluminum Hydroxide, *Am. J. Digest. Dis.* 5: 39 (Feb.) 1941.

18. Finsterer, H.: Die Bedeutung der Resektion zur Ausschaltung für die Behandlung des nicht Resezierbaren Ulcus duodeni, *Wien. klin. Wchnschr.* 46: 545 (May 5) 1933.

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1. Mannheim, S. D.: The Incidence and Prognosis of Hemorrhage as a Complication of Gastrointestinal Ulcer, *M. J. & Rec.* 124: 98, 1926.

2. Chiesman, W. E.: Mortality of Severe Hemorrhage from Peptic Ulcers, *Lancet* 2: 722, 1932.

3. Lenhartz, H.: Eine neue Behandlung des Ulcus ventriculi, *Deutsche med. Wchnschr.* 30: 412, 1904.

4. Lenhartz, H.: Ueber die Behandlung des Magengeschwürs, *Mitt. a. d. Hamb. Staatskrankenanst.* 6: 345, 1906.

5. Andresen, A. F. R.: The Treatment of Gastric Hemorrhage, *J. A. M. A.* 89: 1397 (Oct. 22) 1927.

6. Andresen, A. F. R.: Results of Treatment of Massive Gastric Hemorrhage, *Am. J. Digest. Dis.* 6: 641, 1939.

7. LaDue, J. S.: Treatment of Massive Hemorrhage Due to Peptic Ulcer, *Arch. Int. Med.* 63: 1017 (June) 1939.

sequent examination showed a duodenal ulcer in 3 of these and a marginal ulcer in 3 others. In addition, gastroscopy revealed a marginal ulcer in 2 and an erosive gastritis in 2 others. In the remaining 12 cases

271 patients, or 11 per cent, died; of these, 14, or 5.2 per cent, died of bleeding per se, while 16, or 5.8 per cent, had complicating diseases in addition to the hemorrhage.

TABLE 1.—Age and Sex Distribution and Mortality by Decades

Age in Years	Male	Female	Total	Deaths	Per Cent Mortality
10 19	9	2	11	0	0
20 29	61	7	68	3	4.4
30 39	81	15	96	7	7.3
40 49	82	13	95	3	3.2
50 59	69	13	82	7	8.5
60 69	36	12	48	13	27.1
70 79	6	1	7	2	28.6
80 89	1	0	1	1	100
Total	345	63	408	36	8.8

and in 19 others in which further examinations were refused the previous history and the clinical course clearly indicated the presence of a peptic ulcer.

2. Thirty-nine patients were given the Meulengracht diet immediately on admission to the hospital. In 26 of these this plan could be followed without interruption. It had to be discontinued in 13, owing to a recurrence of bleeding in 7, 3 of whom died; severe pain in 3, 1 of whom had a perforation of his ulcer and died postoperatively, and severe nausea and vomiting in 3. Four of the 39 patients, or 10.3 per cent, died; of these, 2, or 5.1 per cent, died of bleeding per se.

3. Thirty-four patients were treated by duodenal alimentation according to Einhorn's method. The tube was inserted within twenty-four hours after admission. Small oral feedings of milk were given hourly until the tube reached the duodenum, when duodenal alimentation was instituted. One of the 34 patients, or 2.9 per cent, died of exsanguination.

TABLE 2.—Analysis of Mortality According to Severity of Bleeding and Plan of Treatment

Grade of Bleeding *	Restricted			Meulengracht			Duodenal Intubation			Combined			Total		
	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality
1	48	1	2.1	12	1	8.5	10	0	0	14	0	0	84	2	2.4
2	87	6	6.9	9	0	0	13	0	0	17	0	0	126	6	4.8
3	56	5	8.9	14	1	7.1	7	0	0	13	0	0	90	7	7.8
4	80	18	22.5	4	2	50.0	4	1	25	20	1	5	108	21	19.4
Total	271	30	11.1	39	4	10.3	34	1	2.9	64	1	1.6	408	36	8.8
		14†	5.2†		2†	5.1†								18†	4.4†

* Grade 1
Grade 2
Grade 3
Grade 4

† Mortality from bleeding per se, excluding cases with complicating diseases

Hemoglobin

12 Gm (80%) or above
9-11.8 Gm (60-79%)
6.8-8.8 Gm (45-59%)
Below 6.8 Gm. (below 45%)

Red Blood Cells per Cu. Mm.

4,000,000 or above
3,000,000 3,900,000
2,250,000 2,900,000
Below 2,250,000

Frank hematemesis alone was present in 71 cases, tarry stools alone in 160 and both hematemesis and melena in 177. Patients with only blood streaked vomitus or occult blood in the stool were not included in this series. Two hundred and eighty-three patients were seen during their first hemorrhage, 84 in the second and 25 in the third. Sixteen had four or more hemorrhages. One patient was seen in his twelfth bleeding episode. In 43 cases hemorrhage was the first symptom to appear.

The severity of the bleeding in this series was graded according to the lowest recorded hemoglobin value and red blood count in each case, grossly as indicated in table 2. Where there was overlapping of the values into two grades, the final classification was based on additional data such as the presence of restlessness, vertigo, syncope or collapse, the pulse rate, blood pressure, serum proteins and blood urea nitrogen and the amount of bleeding actually observed during the hospital stay. These criteria are a more satisfactory index of the degree of bleeding than the use of such terms as profuse, gross, massive or copious hemorrhage, which may be variously interpreted.

The patients in this series were further classified according to the method of treatment, as follows:

1. Two hundred and seventy-one patients were treated by an initial period of fasting of variable duration followed by a Sippy type of diet. Thirty of the

4. Sixty-four patients were treated by a combined method. On admission to the hospital food was withheld for one day, or longer if bleeding continued. During this time venoclyses of 5 per cent dextrose in physiologic solution of sodium chloride to which were added 300 mg. of ascorbic acid and 25 mg. of thiamine hydrochloride were slowly administered. When necessary, indirect transfusions of 250 to 500 cc. of citrated blood were slowly given. If whole blood was not available, serum or plasma was used. The daily fluid intake during this period was limited to about 3 per cent of the body weight. When bleeding had ceased, as evidenced by a stabilized blood pressure, pulse, blood findings and the clinical impression, hourly feedings of 1 ounce (30 cc.) or more of whole milk were given for one day or longer. If well tolerated, an ounce or more of cereal was given alternately with the milk every half hour for one or two days. During this time the fluid intake was supplemented by proctoclyses or venoclyses if necessary. Thirty-three patients in this combined group, who had no pain, had the feedings of milk and cereal followed, on the fourth to the seventh day after admission, by a diet consisting of cereals, cream soups, bread and butter, custards, jello, junket, milk, raw and soft boiled eggs, baked and mashed potatoes and puréed bland vegetables. These foods were given in increasing amounts for five days, when broiled white fish, minced chicken, lamb and scraped beef were added.

At this time no restriction was placed on the patient's appetite. Thirty-one patients in this combined group who were in pain had a duodenal tube inserted on the fourth to the seventh day after admission. When the tube reached the second portion of the duodenum, feedings consisting of one egg, 8 ounces (15 cc.) of milk and 1 tablespoon of lactose were given every two hours through the tube, as well as 500 cc. of a 5 per cent dextrose solution or of tap water, twice daily. The total daily intake was about 2,400 calories. The duodenal feedings were continued for two weeks, after which a liberal diet was given by mouth. The average period of bed rest was three weeks and the total hospital stay about four weeks. Of the 64 patients, 1 died of exsanguination. She was treated by a combination of initial restriction and duodenal alimentation. The mortality for this group was 1.6 per cent.

Morphine and the barbiturates were administered as indicated to insure mental and physical rest. Alkaline powders, similar to the original Sippy formulas, or colloidal aluminum hydroxide preparations, or the Meulengracht powder with ferrous lactate were employed. Iron preparations were prescribed as indicated, as were thiamine hydrochloride, ascorbic acid and menadione.

any indiscretions, physical exertion and overwork. Trauma to the abdomen was stated to have occurred in 1 case. The greatest number of bleeding episodes occurred from the latter part of October to the early part of March, which corresponds to the increased incidence of respiratory infections. Bleeding followed intoxication in a few cases but more frequently it occurred in those in which small amounts of alcohol were taken with meals. Emotional strain manifested itself mainly in worry over financial matters, business or profession, family illness and domestic difficulties.

ANALYSIS OF MORTALITY

Thirty-six patients in this series died. There were 29 men and 7 women. The youngest was 22 years old and the oldest 86, the average being 53 years. The duration of their symptoms varied from three to thirty years, the average being five and six-tenths years. In 3 cases the onset of the fatal hemorrhage was the first symptom. Of the 36 patients, 23 died during their first hemorrhage, 10 during their second, 2 during their third and 1 during his sixth hemorrhage. Thirteen had a gastric ulcer, 20 a duodenal ulcer, 2 both gastric and duodenal ulcers and 1 a hemorrhagic gastritis of a resection stump.

TABLE 3.—Analysis of Mortality According to Age Groups and Plan of Treatment

Age	Restricted			Meulengracht			Duodenal Intubation			Combined			Total		
	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality
Below 50 yr.	162	11	6.6	30	1	3.3	29	0	0	49	1	2.1	270	13	4.8
50 yr. and above	109	19	17.4	9	3	33.3	5	1	20	15	0	0	138	23	16.6
Total	271	30	11.1	39	4	10.3	34	1	2.9	64	1	1.6	408	36	8.8
		14*	5.2*		2*	5.1*								18*	4.4*

* Mortality from bleeding per se, excluding cases with complicating diseases

The experience with the four methods of treatment has been analyzed according to comparable grades of bleeding in table 2 and in the age groups above and below 50 years in table 3. In both tables, the influence of complicating diseases on the mortality is shown.

Twenty-eight of the 408 patients included in this series came to operation after a period of medical treatment varying from one day to three weeks. Twenty-three were originally treated with the restricted dietetic regimen. Four of these died postoperatively. One was treated by the Meulengracht diet and died following an operation for a perforation. Two patients were originally treated by duodenal intubation and 2 by the combined method. All 4 survived surgery. Five of the patients who came to operation had grade 1 bleeding, 9 grade 2, 4 grade 3 and 10 grade 4. In table 4 the mortality percentages of medical treatment alone and of both medical and surgical treatment above and below 50 years of age are shown.

There were 3 patients who were treated with Andersen's diet and 6 with a continuous intragastric drip of colloidal aluminum hydroxide. These were not included in this series because they were too few in number to permit any conclusions.

CONTRIBUTORY FACTORS

The factors which played a role in precipitating the hemorrhages in this series were, in the order of frequency, infections of the upper part of the respiratory tract, alcoholic beverages, emotional disturbances, diet-

Eighteen of the 36 patients who died, or 4.4 per cent of the total, had other diseases in addition to the bleeding ulcer which contributed to the fatal outcome. Of these 18 patients, 8 had grades 1 and 2 bleeding, of whom 7 were over 50 years of age. The remaining 10, of whom 6 were 50 years of age or over, had grades 3 and 4 bleeding. The complicating diseases were cerebral accidents, coronary thrombosis, congestive heart

TABLE 4.—Comparison of Mortality Above and Below 50 Years of Age on Medical and Both Medical and Surgical Treatment

Age	Medical			Medical and Surgical		
	Cases	Deaths	Per Cent Mortality	Cases	Deaths	Per Cent Mortality
Below 50 years	252	10	3.9	18	3	16.6
Above 50 years	128	21	16.4	10	2	20.0
Total	380	31	8.2	28	5	17.9

failure, renal disease, perforation of the ulcer, adenocarcinoma of the rectum and bronchopneumonia.

Of the 36 patients who died, 26 received transfusions, which were direct in all but 1 instance. Bleeding was not the sole cause of death of 11 of these 26 patients. The mortality rate in the entire series increased with the severity of the hemorrhage, whether transfusions were given or withheld. As the severity of the bleeding increased, a greater proportion of the patients received transfusions; 76.5 per cent of the 170 patients who

received transfusions, as compared to 28.6 per cent of the 238 patients who received no transfusions, had grades 3 and 4 bleeding. The patients in this series who received no transfusions were chiefly those who had a single hemorrhage without recurrence of bleeding during their hospital stay; a lower mortality is to be expected in these cases. On the other hand, 3 patients with grade 4 bleeding received five, seven and eight transfusions respectively and survived. It was difficult in many cases of recurrent bleeding to avoid the conclusion that transfusion was an important factor in the survival of the patient. On the other hand, with an exsanguinating hemorrhage or a complicating disease a fatal outcome could not be charged to transfusions.

In view of the statement which recurs frequently in the literature that transfusions increase the mortality by raising the blood pressure and dislodging the clot, it was thought of interest to compare the mortality rate of patients with and without hypertension. In this series there were 42 patients whose blood pressures on admission ranged from 150 mm. to 235 mm. of mercury. Based on Allen's²³ statement that a systolic blood pressure of 140 is a hypertensive level, 26 patients whose blood pressures ranged from 140 to 150 were included in this group, making a total of 68 patients, or 16.6 per cent of the series, who had hypertension. One may assume that the usual blood pressure of these patients was higher than that recorded during the hemorrhage. Of the 68 patients, 8, or 11.8 per cent, died, as compared to a mortality of 8.2 per cent in patients without hypertension. Of the 8 patients with hypertension who died, 4, or 5.9 per cent, died of exsanguination, as compared to 4.1 per cent of patients without hypertension, in whom bleeding was the sole cause of death.

COMMENT

Quite apart from the therapeutic procedure employed, the mortality in a series of cases of bleeding peptic ulcer is influenced by three factors: the severity of the bleeding, the age distribution and the presence of other organic diseases which determine or contribute to an unfavorable outcome. Differences in these factors probably account for the varied mortality statistics presented by many authors.

The need for grading the bleeding as an index of severity is emphasized by the demonstration that the ingestion of 50 to 80 cc. of blood is sufficient to produce a tarry stool.²⁴ The persistence of a tarry stool or of occult blood does not in itself indicate continued bleeding, because the former often persists for several days and the latter for one or two weeks after the hemorrhage has ceased. It is generally recognized that the mortality in bleeding peptic ulcer is higher in the older age group, as the result of arteriosclerosis and complicating diseases which may result in an unfavorable outcome even with a mild hemorrhage. Forty-eight and eight-tenths per cent of the patients in this series had grades 3 and 4 bleeding with a mortality of 14.1 per cent, as compared to a mortality of 3.8 per cent in those with grades 1 and 2 bleeding. Of the patients in this series 38.8 per cent were 50 years of age or over with a mortality of 16.6 per cent, as compared to a mortality of 4.8 per cent in those under 50 years of age. Fifty per cent of the fatalities were of patients who had complicating diseases. There are certain com-

plications which may make a fatal outcome inevitable but there are others, such as circulatory failure, azotemia and perforation, which may in part if not entirely be the result of the therapeutic procedure employed.

While mild uncomplicated cases do not, as a rule, present any problem, the treatment of severe gastroduodenal hemorrhage involves the following objectives: to aid in the arrest of bleeding, overcome shock and dehydration, combat anemia and depletion and prevent recurrence of hemorrhage. In the presence of continued bleeding, mental and physical rest are essential. The immediate need in these cases is not for food but usually for the restoration of the water balance to prevent or overcome shock, dehydration and extrarenal azotemia. If the daily parenteral fluid intake is kept to about 3 per cent of the body weight and administered slowly, there is little or no danger of increasing blood volume beyond its normal range. The regulation of the water balance is essential to the maintenance of normal function of the kidneys, which are burdened by an increased urea production at a time when the circulating blood volume is decreased. The resultant extrarenal azotemia is not proportional to the anemia,²⁵ and persistently high urea nitrogen levels indicate a bad prognosis, a fact which is corroborated by our experience in this study. Jones,²⁶ in analyzing a series of 39 fatalities, found that dehydration was an important factor in 18, and that 7 persons who had uremic blood levels did not die of anemia. Small citrated transfusions, frequently given, should be employed if the anemia is severe. The contention that transfusions raise the blood pressure, thereby dislodging the clot, cannot be directed to slowly administered drip transfusions, for Jones²⁷ has shown that transfusions of this type given in amounts up to 2,650 cc. daily produce no rise in blood pressure.

Our experience has been that progress was more satisfactory with food restriction until the active bleeding stopped. It was deemed advisable in all cases to withhold food for at least twenty-four hours after admission until it was determined that hemorrhage had ceased, at which time food was permitted in small amounts. Melena or occult blood in the stool was not regarded as a contraindication to food. If the small feedings were well tolerated, the diet was quickly increased. For patients without pain, a liberal diet was given by mouth. For those with pain, the increase in diet was accomplished by duodenal alimentation.

Meulengracht⁹ has stated that food in the stomach does not increase or protract the bleeding. In this connection it is of interest to note that he was inclined to think that the bleeding had stopped in most of his cases before arrival at the hospital, and that on the whole they were of a milder character than the hospital cases in England. Five of the ten fatalities in his series of 491 cases were due to bleeding which recurred from two to nineteen days after admission. In our series of 39 patients treated with a Meulengracht diet from the time of admission, 7 patients, 3 of whom died, had a recurrence of bleeding on the second to the eighth day. In addition, 3 patients experienced severe pain, and 1 of these died of a perforation. Meulengracht did not cite the age distribution of his patients.

25. Rafsky, H. A., and Weingarten, Michael: The Clinical Significance of Prerenal Azotemia in Digestive Tract Disease, *New York State J. Med.* 39: 1086 (June 1) 1939.

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The decision as to surgical intervention in bleeding peptic ulcer is a difficult one. The gastroenterologist hesitates to advise surgery because medical measures alone are frequently successful even when the situation appears critical. The decision cannot be made in advance based on statistical data alone but should be made in each case by weighing the severity of the bleeding, the ability of the patient to withstand radical surgery, the presence of complicating diseases and the skill of the surgeon. We have adopted the following procedure: If bleeding continues notwithstanding medical measures, the surgical division is consulted and the patient observed by both divisions. If after the use of transfusions the systolic blood pressure remains at 90 or below, the pulse rate 130 or above and the hemoglobin 35 per cent or below, surgery is advised in the absence of a complicating disease which would render operation futile.

Another problem which frequently arises is whether to advise an interval operation to prevent a recurrence of hemorrhage. In this series 64 per cent of the fatalities resulted from the first hemorrhage. One should be guided in making a decision as to an interval operation by the ability and willingness of the patient to avoid the contributory factors previously mentioned and the presence or absence of complicating diseases. It must be borne in mind that surgery does not always succeed in preventing a recurrence of hemorrhage. Thirty-nine of the patients in this series had had a gastroenterostomy prior to their bleeding episode. Three had hemorrhages in from one to three years following a subtotal resection, two of which were from anastomotic ulcers and one from a diffuse gastritis of the stump which resulted in fatal bleeding.

Gastrosocopy may be helpful in the interval between hemorrhages in determining the source of bleeding. In this series, gastrosocopy revealed that 2 patients had an erosive gastritis and that 2 others had marginal ulcers which were not detected by other means.

SUMMARY

A comparative study of various methods of treating bleeding peptic ulcer was made in a series of 408 patients. A basis for grading the severity of the bleeding was evolved and the influence of age and of complicating diseases on mortality determined. The data obtained in this study revealed the following:

1. Patients with mild uncomplicated hemorrhage progressed favorably with any of the medical methods.

2. Fifty per cent of the fatalities were of patients with complicating diseases; the latter accounted for all deaths of patients with grades 1 and 2 bleeding.

3. The total mortality rate below 50 years of age was 4.8 per cent, as compared to 16.6 per cent for patients 50 years of age or over.

4. Below 50 years of age the mortality rate for surgically treated patients was 16.6 per cent, as compared to 3.9 per cent on medical measures alone; while above 50 years of age the respective mortality percentages were 20 and 16.4.

5. The mortality rate with the restricted dietetic regimen was 11 per cent, of which 5.2 per cent were due to bleeding per se; with the Meulengracht diet, 10.3 per cent, of which 5.1 per cent were due to bleeding per se; with duodenal intubation, 2.9 per cent and with the combined method herein described, 1.6 per cent; in the latter 2 instances the fatalities were due to exsanguination.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. EUSTERMAN AND DRS.
RAFSKY AND WEINGARTEN

DR. NATHANIEL E. REICH, Brooklyn: Until such time as definite factors responsible for the formation of peptic ulcers are discovered, the treatment must be empirical and symptomatic. Treatment of hemorrhage presents four problems: 1. Stop the hemorrhage. 2. Keep the patient from dying from shock or circulatory failure. 3. Treat the ulcer. 4. Treat the anemia. In stopping the immediate hemorrhage, morphine is the drug of choice. It has been objected that morphine frequently excites nausea and vomiting. However, much of the recent experimental evidence indicates that this drug produces a fall in tone, a decrease in amplitude of rhythmic contraction and a decrease in the work performed by the stomach. I have found that therapeutic doses exhibit a definite inhibition of the fasting gastric secretion in the majority of instances. In the small percentage of patients that retch constantly, it may be advisable to wash the stomach rapidly with hot saline solution. Besides stimulating clot formation, this washing also gives direct information concerning the continuation or the recurrence of bleeding. Most physicians are in agreement that the danger of increasing hemorrhage by raising the blood pressure by transfusion is extremely slight if it is given by the slow, intravenous drip method. Jones has given as much as 1,200 cc. by this method, with no evidence of continued bleeding. I have found similar results. Besides replacing blood volume, proteins and hemoglobin, transfusion has the additional advantages of acting as a powerful hemostatic and hemopoietic agent. At least 80 per cent of the lost blood should be replaced by whole blood or blood plasma. Indications for blood transfusion are: 1. Systolic blood pressure of less than 75 mm. 2. Pulse rate of more than 140 per minute. 3. Hemoglobin of less than 35 per cent. 4. Shock, delirium, persistent headache and restlessness. An excellent consideration of medical treatments of the ulcer has already been mentioned by Dr. Rafsky. Anemia is best treated with oral iron preparations. The Meulengracht diet produces a more rapid regeneration of red blood cells and hemoglobin. Small transfusions may be found advisable about one week after the hemorrhage becomes quiescent.

DR. JOHN DAY GARVIN, Pittsburgh: I will confine my discussion of Dr. Eusterman's paper to presentation of 2 cases. A woman of 60 with a vague dyspeptic history of six weeks' duration presented in a roentgenogram a very small ulcerating lesion on the lesser curvature. I initiated an ambulant regimen. Within six weeks there was a great increase in the size of the lesion. The fact that I was dealing with a malignant ulceration was now apparent. At operation, resection was done with fair facility. The pathologic diagnosis locally, and ultimately by Broders, was that of a grade 4 carcinoma. After fourteen years the resected stomach seems perfectly normal and the patient insists that she is "just fine." In this case medical therapy was not only not misleading but, indeed, furnished the diagnostic base for the proper aggressive action. The second patient is a woman of 55 with a typical ulcer history of five years' duration. As the roentgen appearance was that of a large ulcerating lesion on the greater curvature, I insisted on prompt surgery. She would not submit to an operation and was placed on an ambulant ulcer regimen. She got complete relief from all discomfort, and the roentgenologic picture changed decidedly. The ulcer niche decreased persistently in size, ultimately almost disappearing. I did not see her for five months, at which time the picture was much as before, save for an increase in the constricting nature of the lesion. She consulted another doctor who was quite certain of the benign nature of the "ulcer" and utilized a four weeks intensive hospitalization regimen. After this he too suggested surgery. The surgeon, a competent one, told me that it was definitely a benign ulcer. The pathologic diagnosis was adenocarcinoma. My colleague was completely misled by the results of medical therapy. Subjectively they were, indeed, all that could be asked. As has been said by Dr. Eusterman, the niche of a supposed gastric ulcer may diminish in size or even disappear roentgenologically under non-operative treatment but may still turn out to be malignant, the improvement being caused by the subsiding of an inflammatory reaction associated with the malignant ulcer.

DR. JAMES F. WEIR, Rochester, Minn.: In any discussion on peptic ulcer it is necessary to distinguish gastric from duodenal ulcer. The diagnosis usually is accomplished by roentgenologic examination. Because the roentgenologic diagnosis of gastric ulcer depends primarily on the demonstration of a crater, the progress of healing can be followed readily. However, because the roentgenologic diagnosis of duodenal ulcer depends on a persistent deformity of the cap, craters are demonstrable in only 20 to 40 per cent of the cases, and because this deformity usually persists after healing there remains no satisfactory roentgenologic finding by which the activity, inactivity or healing state of duodenal ulcer can be determined. Gastric ulcers usually can be visualized through the gastroscope, but duodenal ulcers are beyond the reach of this instrument. In the medical treatment of gastric ulcer, certain principles are well established and many gastric ulcers can be shown to fulfil the requirements. Failure to do this is not necessarily a sign that the ulcers are malignant but may indicate chronic induration, a deep crater, walled off perforation or hourglass contraction, and on such evidence the ulcers may be classed as intractable and requiring surgical treatment. The problem of duodenal ulcer is somewhat different. Experience at the Mayo Clinic is similar to that of others; namely, that 75 to 80 per cent of these patients usually can be handled satisfactorily by medical measures, malignant changes practically never occur and in cases in which acute perforation, obstruction and repeated hemorrhages occur treatment is definitely surgical. In addition to these surgical cases there remains a group of cases in which severe symptoms, such as long duration of symptoms, progression in frequency and duration of attacks, lack of remissions, increasing severity of pain, nocturnal awakening, posterior extension of pain, lessening relief from food and failure to respond satisfactorily to medical treatment, appear. These symptoms usually mean induration, chronic penetration or beginning obstruction, for which surgical treatment should be instituted before the patient becomes debilitated or demoralized by pain or economic stress.

DR. SARA M. JORDAN, Boston: Dr. Eusterman's paper revives the most important problem in gastroenterology. No one who knows the statistics of incidence of cancer of the stomach can fail to be impressed by them. A recent review of our cases of gastric ulcer leads us to the following conclusions: To a confirmation of certain points in which we have believed for years; namely, that neither the size of the ulcer nor the age of the patient nor the presence of normal acid or hyperchlorhydria should lessen our suspicion of carcinoma, for some of our largest lesions have been benign and some of the smallest malignant, and malignant lesions occur often enough in the young, and benign ulcers often enough in the middle aged and old, and acid is present often enough where the lesion is malignant, so that these three criteria of size of ulcer, age of patient and presence or absence of acid have no actual practical value in the diagnosis of the individual patient, even though accumulated data on these points show a statistical trend. To a feeling of confirmation of the policy which we have practiced for many years, namely that the three criteria of complete disappearance of occult blood, x-ray defect and symptoms, are proof of healing. I would add recurrence as an indication for resection and shall not be unhappy if we have many benign lesions resected, for in the present fortunate era of almost perfected gastric resection the danger from the mortality of resection is less than the danger of gastric cancer as a sequela of recurrent gastric ulcer. Two other points are: (a) We believe that all greater curvature lesions are malignant. (b) Posterior wall ulcers, either of the median or of the prepyloric area, because often embedded in adjacent organs, cannot heal as readily as those which are not so embedded, nor can their healing be as well visualized fluoroscopically or gastroscopically. Hence, since many of the prepyloric lesions are on the posterior wall, their differentiation is more difficult and, if allowed to continue unhealed, a malignant condition may result. Even with perfected surgery it is (1) unnecessary to resect all gastric ulcers, (2) essential that to the former three criteria for benignity a fourth be added, namely a failure to recur, and (3) necessary to exercise the greatest care to make certain that complete healing has occurred and that, where there is doubt because of recurrent occult blood or of difficulty in following the lesion to complete healing because of the location of the ulcer or the management of the patient,

resection should be done. There should be a careful evaluation of the behavior of the stomach wall adjacent to the ulcer, in addition to the gastroscopic appearance of the mucosa and the closing of the ulcer.

DR. SIDNEY A. PORTIS, Chicago: Increasing clinical experience has not deterred me from my original position because I have not seen any evidence presented to make a definite differential diagnosis preoperatively in a questionable lesion. Even with the gastroscope no clear differentiation can be made. I cannot understand how a gastroscopist can be sure that a given lesion is benign when a surgeon with equally good clinical experience, the abdomen open, the lesion in his hand, cannot make a final diagnosis. Therefore, as I maintained years ago and still maintain, I would trust only the microscope in making this fine differential diagnosis. I still feel that gastric lesions, for the most part, are better handled by the surgeon. I am not discussing persons in their early twenties with a small, acute ulcer, but particularly that group of patients beyond 35 years of age who are good operative risks. I am convinced that the mortality and morbidity which would accrue in handling these early lesions surgically would be far less than a similar large series of cases handled medically. I think Dr. Eusterman will recall a case that I sent up to the clinic for review, in which the gastroscopist made a definite diagnosis of carcinoma with achylorhydria. Exploration was performed and a resection of the lesion failed to reveal any evidence of malignancy. With regard to Drs. Rafsky and Weingarten's statistics, I think we ought to be careful about the evaluation of the morbidity and mortality that accrue from surgical intervention in bleeding ulcers. I do not think we are quite fair in comparing our results with others because, for the most part, these patients have surgical intervention when procrastination and medical measures have long since failed. I feel that patients who come to our attention with exsanguinating hemorrhages are better handled at the outset by surgeons than to go through the trials and tribulations of medical management. When we are able to evaluate our statistics from both sides of this problem, namely those treated early from the standpoint of surgery and those from the standpoint of medical management, we shall be in a better position to say which would be the better type of treatment. It is interesting to note how frequently the findings at operation will impress on the mind of the medical man the futility of continued medical treatment in these complicated ulcer cases.

DR. J. SHELTON HORSLEY, Richmond, Va.: We have come a long way since thirty years ago when the late Dr. John B. Deaver in his dramatic manner said "the only cure for peptic ulcer was the aseptic scalpel." We now know that a young man who has had an aseptic scalpel applied to him for a peptic ulcer of the duodenum in the way of a gastroenterostomy and has high gastric acid is in a very unhappy situation. The great majority of peptic ulcers of the duodenum are better treated by medical means. And by "medical means" I imply that the treatment of the patient is more important than the treatment of the disease. It is a problem of proper living in a quiet environment, just as much as, if not more than, diet and drugs. In the treatment of hemorrhage we have also changed a good deal. Surgeons and medical men are not as antagonistic as they used to be. The statistics of Drs. Rafsky and Weingarten would doubtless show even more strikingly the difference in the mortality of certain groups if they had put his age limit down to 40, for instance. Over 40 or even 35 years of age the mortality of hemorrhage from a peptic ulcer increases alarmingly, and the need for surgical intervention is very much greater. No matter what the blood count is, within reasonable limits, if the blood pressure is too low for too long the patient may get in such a state of shock that even transfusions of plasma or of blood cannot save. Dr. Eusterman has given, as usual, a splendid paper. There have been many cases of what appeared to be benign ulcer that have proved to be malignant. They are more important than cases of what appeared to be malignant ulcers that were really benign. One of the most important things we can bring out here is the fact that Dr. Eusterman and others have emphasized: In practically every early case of gastric cancer, medical treatment for ulcer will relieve the clinical symptoms for a time. This fact has been thought to be a therapeutic test for showing a benign lesion, just as giving quinine is for malaria. This is a common cause of delayed diagnosis

and treatment. If operation for a peptic ulcer is indicated, a partial gastrectomy should, as a rule, be done. The indirect or halfway procedures, such as pyloroplasty and gastroenterostomy, are often unsatisfactory.

DR. EVERETT D. KIEFER, Boston: If we cannot treat the condition satisfactorily our only answer to the problem is possible prevention, and that means that it is important for both the physician and the patient to realize that ulcer is an intermittent disease and a progressive disease, and that with each attack there is added damage to tissue, increased scar formation, and if this is allowed to accumulate over a period of years we get the intractable peptic ulcer; therefore it is important for the patient to establish himself on a regimen for the control of this disease. We do not speak of cure; we speak of continued control, which means a constant, a permanent regimen that will keep him free of symptoms at all times, and it is best when it is controlled by the physician by occasional examinations to show that there is not accumulating additional anatomic change in the duodenum.

DR. HENRY A. RAFSKY, New York: We found that in the initial stage the immediate problem was the restoration of the water balance. If anemia was present citrated transfusions were employed, but in this connection it should be borne in mind that the criteria by which anemia is judged may be deceptive in the early stage. Lyon and Brenner made a comparative study of the regeneration of blood in patients treated with Meulengracht and Sippy plans respectively and found no difference in blood regeneration with either method. With reference to a systolic pressure of 75 mm. of mercury, we think that this is a dangerously low level to wait for. If the blood pressure fell below 90 in our cases, notwithstanding repeated transfusions, we felt that surgical intervention was indicated. Atropine was not used. With regard to surgery, it seemed that patients below 50 years of age had a better chance to survive with medical measures. Statistically speaking there was not much difference in the mortality rate in patients past 50 years of age whether medical or surgical measures were employed. It must also be borne in mind that bleeding episodes do occur after surgery. In this series the rise in the mortality rate was most striking after 50 years of age.

DR. ALBERT F. R. ANDRESEN, Brooklyn: Care must be taken not to assume that the symptoms which a patient has must be due to an ulcer seen six months or two years before. The symptoms are usually due to something entirely different. The lessons we have learned call attention to the importance of repeated and careful check-up in the presence of any ulcer, large or small, especially if it is in the stomach, and regardless of whether the symptoms have cleared up, because often the persistence of ulcer and of deformity may not be accompanied by intractability of symptoms. There has been pointed out the importance of careful interpretation of x-ray and other findings. I agree with Dr. Jordan with regard to the size of the crater in gastric ulcer as being no indication of whether carcinoma is present or not. We must recognize small carcinomas if we are going to cure people with them at all. Dr. Eusterman showed us carcinomas in young people. All lesions must be frequently checked by x-ray examination to make sure they are not malignant. Large craters may decrease in size as the result of subsidence of edema and inflammation, but irregularities usually remain. The x-ray examination may be a better criterion of carcinoma than the operation. Most cases of duodenal ulcer seen on the operating table are of the complicated type, with large masses of adhesions, induration and old perforation. That is found much more frequently than formerly. Formerly they were not recognized in advance but with more careful spot-film check-up they are seen almost as often as similar gastric ulcer complications and differentiation must be made between irritability and fixation, which can be done by fluoroscopy and the spot films, and persistence of crater as indicating a pocket can also be recognized. As Dr. Portis said, these cases should not be tampered with by medical treatment. They require operation. We should all realize that we should not say that there is a failure of medical treatment in these cases but recognize from the start the surgical indication and follow the patients for a time, with further check-up to make sure we were right that they were surgical from the start.

DR. GEORGE B. EUSTERMAN, Rochester, Minn.: Apropos of some features mentioned by the discussers, I noted in the paper that over one fourth of the carcinomatous gastric lesions of all types give rise to symptoms indistinguishable from chronic benign ulcer and unfortunately may also temporarily respond favorably to treatment. Since the publication of the section program in THE JOURNAL, several physicians have communicated with me and have related experiences similar to my own but have not reported them. It is not the purpose of this paper to serve as a green light to every surgeon to operate indiscriminately on every patient with a gastric ulcer, for we know that the operative mortality and morbidity by and large would be prohibitive. It is also to be remembered that the great majority of such small ulcerous lesions are benign, and many will respond favorably to adequate medical therapy. Case 3 is illustrative of the slow progress of some carcinomas. Symptoms may be present for four or five years. As the muscularis in this instance was intact, the pathologists inferred that the lesion was malignant from the outset. Such long duration of symptoms, taken into consideration with the occasional favorable response of ulcerating carcinomas to treatment, puts the proponents of the carcinomatous transformation of benign ulcer on the defensive. If cases such as I have reported herewith are not periodically checked following treatment, one could easily draw the false conclusion of regarding them as examples of carcinoma on ulcer, or carcinoma developing independently of the ulcer, when the patients returned later with extensive, often inoperable, carcinomatous involvement of the organ.

INTESTINAL AND MESENTERIC INJURY DUE TO NONPENETRATING ABDOMINAL TRAUMA

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Our purpose in this communication is to set forth the results of studies of a surgical problem for which treatment up to now has been significantly unsuccessful, as evidenced by a distressingly high mortality rate. These studies regard the little-understood injuries to the intestine and the mesentery by force which does not penetrate the abdominal parietes, and they were occasioned by recent clinical experiences in which the unfortunate outcome, while expected and reasonably explained, yet seemed preventable. During the past year we have observed 3 patients with rupture of the intestine, in 1 of whom the diagnosis was obvious and prompt operative treatment was followed by recovery. Operation on the other 2 patients was delayed until after the full development of generalized peritonitis, with resulting death. With full realization that recovery might have been possible had the diagnosis been made in the first few hours after injury and with a desire to determine the minimum information necessary to establish a tentative diagnosis leading to earlier surgical intervention, we have studied all available case records in the city hospitals of Atlanta and Cincinnati, and in addition we have studied the experiences of others to obtain such data as seem significant.

EXPERIENCE OF OTHERS

Many points of historical interest were uncovered in tracing the recorded information back to the first writings on this subject. The extreme fragility of the

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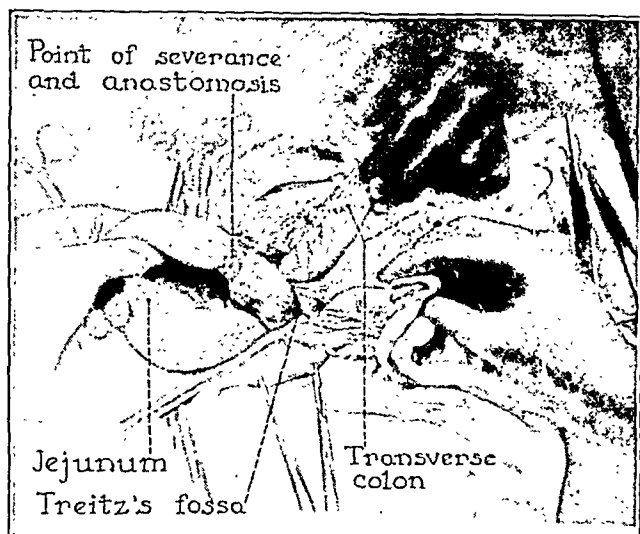
intestine was known to Aristotle,¹ who said: "A slight blow will cause rupture of the intestine without injury to the skin." In the middle centuries autopsy reports of intestinal injury due to kicks by horses, blows and falls on the abdomen appeared, and it was noted that many times the injury seemed trivial or insignificant. The first successful operation for subparietal rupture of the intestine is said to have been reported by Sacherus² in 1720. Rambdohr³ in 1730 sutured a complete division of the intestine, with recovery of the patient, and the intact specimen was obtained later when the patient died with pleurisy. In the early part of the nineteenth century experiments were carried out on dogs by St. Croix,⁴ Travers⁵ and Gross⁶ in an attempt to find out the mode of production of intestinal injury and to discover a satisfactory method of suture. In the United States the first case report, by Annan,⁷ appeared in 1837, and in 1876 Gregory,⁸ in St. Louis, undertook to operate on a patient with such an injury, but the patient died.

At about this time many outstanding surgeons (Sims,⁹ Parkes,¹⁰ MacCormac,¹¹ Lonquet,¹² Curtis¹³ and

patient survived for ten days and died after manipulation of the resulting fecal fistula. J. Croft¹⁶ in 1887 operated on a patient with rupture of the ileum and was successful at the first operation, but the patient died four weeks later after attempts to close a fecal fistula.

TABLE 1.—Comparison of Mortality Rates in Other Series

Author	Number of Patients	Number Operated On	Number Who Died	Operative Mortality, Percentage	Number Died Without Operation	Total Mortality, Percentage
Royster.....	1	1	0	0	0	0
Leighton.....	1	1	0	0	0	0
Senn.....	1	1	0	0	0	0
Aldr.....	4	4	1	25	0	25
Estes.....	19	19	10	52	0	52
Stone.....	4	4	2	50	0	50
Ulrich and associates..	1	1	0	0	0	0
Kahn.....	4	3	1	33	1	50
Bacon and LeCount...	8	Not stated			8	100
MacMillan.....	2	2	1	50	0	50
Dolan.....	1	1	0	0	0	0
Totten.....	25	16	5	31	9	56
Lawson.....	2	2	1	50	0	50
Rowlands.....	2	2	0	0	0	0
Cope.....	44	30	21	70	14	80
Wilensky and Kaufman..	41	37	22	59	4	63
Mulkey.....	3	3	0	0	0	0
Totals.....	163	127	64	50.4	36	61.3
Counsellor and McCormack.....	1,313	887	539	60.7	426	73.4
Grand total.....	1,476	1,014	603	59.5	462	72.1



Appearance of intestine at operation. There is complete transverse division of the jejunum.

Makins¹⁴) made fervent pleas for surgical intervention in cases of abdominal trauma accompanied with suspected intestinal injury. Many operative attempts resulted, including the operation by Bouilly,¹⁵ whose

1. Aristotle, cited by Morgagni, J. B.: *Epistola* 54: 140-142, 1761; cited by Vance, B. M.: *Traumatic Lesions of the Intestine Caused by Nonpenetrating Blunt Force*, Arch. Surg. 7: 197 (July) 1923.

2. Sacherus: *Programmata publica*, Leipzig, 1720; cited by Heister, L.: *Institutiones chirurgicae*, Amsterdam, J. Waesberg, 1739; cited by Parkes.¹⁰

3. Rambdohr, cited by MacCormac.¹¹

4. St. Croix, cited by MacCormac.¹¹

5. Travers, Benjamin, cited by MacCormac.¹¹

6. Gross, S. D., cited by MacCormac.¹¹

7. Annan, Samuel: *Case of Laceration of Ileum from External Wound*, Am. J. M. Sc. 21: 530, 1837-1838.

8. Gregory, cited by MacCormac.¹¹

9. Sims, J. M.: *Treatment of Gunshot Wounds of the Abdomen in Relation to Modern Surgery*, Brit. M. J. 2: 925 and 971, 1881; 1: 184, 222, 260 and 302, 1882.

10. Parkes, C. T.: *Address in Surgery*, M. News 44: 563 (May 17) 1884.

11. MacCormac, William: *Abdominal Section for the Treatment of Intraperitoneal Injury*, Brit. M. J. 1: 975, 1887.

12. Lonquet: *Remarques sur la rupture de l'intestin sans lésion des parois abdominales*, Bull. Soc. anat. de Paris 3: 799, 1875; cited by Curtis.¹³

13. Curtis, B. F.: *Contusion of the Abdomen with Rupture of the Intestine*, Am. J. M. Sc. 94: 321 (Oct.) 1887.

14. Makins, G. H.: *On Two Cases of Traumatic Rupture of the Colon*, Ann. Surg. 30: 137, 1899.

15. Bouilly: *Coup de pied de cheval; rupture de l'intestin grêle, sans contusion des parois abdominales*, Bull. et mém. Soc. de chir. 9: 690, 1883; cited by MacCormac.¹¹

However, two years later (1889) a similar opportunity presented itself to Croft,¹⁷ and this time he was successful, with permanent recovery following suture of a perforation of the small intestine. Five months later (October 1889) Moty,¹⁸ in Paris, achieved the same result in a patient who was kicked by a horse in the umbilical area.

We have reviewed the experiences of other surgeons from 1889 to the present. Counsellor and McCormack,¹⁹ while adding a case report of jejunal rupture in a child of 8 years, had summarized and tabulated the available case reports up to 1935. They had found records of 1,313 cases, in 887 of which operation was performed and the gross mortality was 60.7 per cent. Diagnosis was established at autopsy in 426, raising the

TABLE 2.—Age, Sex and Race

	Number of Cases (36)	Deaths
Age		
20 years or less.....	14	10
21 to 40 years.....	12	5
Over 40 years.....	10	7
Sex		
Male.....	31	18
Female.....	5	4
Color		
White.....	31	18
Negro.....	5	4

total mortality to 73.4 per cent. Since 1935 163 case reports have been added (table 1), with a decrease in the mortality to 50.4 per cent in cases in which operation has been performed and to 61.3 per cent in all cases.

16. Croft, J., cited by MacCormac.¹¹

17. Croft, J.: *Case of Rupture of Small Intestine Without External Wound*, Tr. Clin. Soc. London 23: 141, 1890.

18. Moty: *Etude sur les contusions de l'abdomen par coup de pied de cheval*, Rev. de chir. 10: 875, 1890.

19. Counsellor, V. S., and McCormack, C. J.: *Subcutaneous Perforation of the Jejunum*, Ann. Surg. 102: 365 (Sept.) 1935.

ETIOLOGY

Mechanism of Rupture.—We believe there are three chief mechanisms by which nonpenetrating trauma of the abdomen may produce intestinal rupture. Most frequently such perforation results from a crushing injury in which the external force compresses the bowel against the spine or the pelvic bones. Occasionally tearing injuries may result from a violent force applied at a tangent to the body. Bursting injuries of the normal bowel are rare, except those which result from the introduction of compressed air into the anal canal.

In our series of 36 cases the accidents responsible for the injuries were divided as follows: (1) blows on the abdomen by blunt objects (14 cases); (2) falls (5 cases); (3) automobile wrecks (11 cases); (4) kicks in the abdomen (4 cases), and (5) other injuries (2 cases).

Predisposing Causes.—Aird²⁰ and Wilensky and Kaufman²¹ stressed the importance of hernia as a predisposing cause in their series of cases of traumatic rupture of the intestine, and we have found that hernia played an important part in 2 of our cases.

The analysis of our cases failed to show any influence of age on the incidence of intestinal rupture; however, there was a predominance of male patients and of white patients in our series (table 2).

TABLE 3—Site of Perforation

	Number of Cases	Deaths
Jejunum	11	6
Ileum	13	8
Colon	2	2
Appendix	2	0
Mesentery (only)	1	0
Stomach	4	4
Multiple sites	4	3
Bowel, complete severance	6	5
Bowel, massive gangrene	1	1
Duodenum	2	1
Total	36	22

SITES OF RUPTURE

The most frequent site of rupture in our series was the ileum (table 3). There were 4 patients with multiple perforations, 3 of whom died, and 6 patients with complete severance of the intestine, 5 of whom died

CLASSIFICATION OF CASES

We found it most convenient to classify our cases into three groups. We intentionally excluded cases in which either recovery or death occurred without operation or autopsy. The recoveries were probably few and the deaths many. The three groups of cases are as follows:

Group A.—In this group the diagnosis and treatment were delayed more than twelve hours after the accident. The delay may be attributed to failure of the patient to seek early medical attention because he thought the injury was trivial. On the other hand the delay may have been due directly to the physician's failure to appreciate the seriousness of the injury. In this group, with 17 cases, the mortality was 70 per cent.

Group B.—Diagnosis and treatment in the 14 cases in this group was promptly carried out. Accordingly, the mortality was only 35 per cent.

Group C.—In this group we placed cases of multiple severe injuries which occasionally overshadowed the serious abdominal condition. The mortality from injuries of this kind will always be high, even though treatment is instituted without delay. Our mortality in 5 cases was 100 per cent.

TABLE 4—Recovery and Death in Three Groups

	Recovery With Operation	Death With Operation	Death Without Operation
Group A Treatment delayed more than 12 hours	5	10	2
Group B Treatment prompt	9	5	0
Group C Multiple serious injuries .	0	2	3

SIGNS AND SYMPTOMS

Injury due to nonpenetrating abdominal trauma is accompanied by symptoms which vary to such an extent that no clear clinical picture can be set down (table 5). The reason is obvious when one remembers that in the first few hours after injury no sign or symptom may appear. In a large percentage of all cases studied the first symptoms to be noted were those of a complication of the injury, viz. peritonitis.

Further studies of intestinal injuries have produced several mechanical explanations for the delayed appearance of symptoms:

1. Incomplete rupture: In many instances severe bruising of the intestinal wall occurs which sloughs through several hours or even days later because of the development of local necrosis. Spillage is facilitated by the onset of peristalsis after the intake of food or fluids.
2. The production of intestinal paresis by the injury, which inhibits peristalsis for a sufficient time to allow an exudate of plastic lymph to seal the opening. After the patient has recovered from primary shock or after the intake of food, peristaltic action is resumed, with consequent leakage. Cope²² first described this interesting theory in 1914.
3. Prevention of leakage: Leakage may be prevented mechanically by the plugging of the opening by the mucosal layers or, in the case of complete transverse

TABLE 5—Signs and Symptoms

	Number of Cases (36)	Deaths
Abdominal pain and tenderness	33	19
Nausea	14	10
Vomiting	17	12
Rigidity	28	15
No hepatic dullness	4	4
Dullness in flanks	4	3
Shock	10	7
Coma	2	2
No external abdominal wound	20	13

division, by contraction of the circular musculature of the divided ends.

In a majority of cases shock was not noted when the injured person was first seen but developed as symptoms of peritonitis appeared. In several instances the evidence of shock came on rapidly after a silent period of approximately six hours, which corresponds to the time at which leakage of the intestinal contents into the

20 Aird, Ian: The Association of Inguinal Hernia with Traumatic Perforation of the Intestine, Brit. J. Surg. 24: 529 (Jan.) 1937.
21. Wilensky, A. O., and Kaufman, P. A.: Subparietal Rupture of the Intestine Due to Muscular Effort, Ann. Surg. 106: 373 (Sept) 1937

22 Cope, V. Z.: Diagnosis and Treatment of Ruptured Intestine, Proc. Roy. Soc. Med. (Sect. Surg.) 7: 86, 1914.

peritoneal cavity takes place. In other cases (group C) shock was severe when the patient was admitted, principally on account of other severe injuries.

The most constant symptom noted in a high percentage of all reported cases was abdominal pain or tenderness. It frequently is insignificant in the first hours but tends to increase steadily in severity. Tenderness may be localized to the site of the injury but may be elicited only by deep palpation. Cope²² has stressed the diagnostic value, in rectal examination, of tenderness due to the gravitation of irritating intestinal contents against the pelvic portion of the peritoneum. Vomiting, often associated with nausea, was noted to be the next most reliable symptom.

The pulse rate is the next important indicator. This may be normal when the patient is first seen but tends to rise steadily.

Distention, diminution or absence of hepatic dulness, the appearance of fluid in the flanks and roentgen evidence of air under the diaphragm all are considered positive evidence of peritonitis and are indications for immediate operation. Restlessness, rapid and superficial respiratory movements and definite pain on forced deep breathing are also positive evidence of complications such as hemorrhage or peritonitis.

In our series the only constant signs and symptoms were abdominal pain, tenderness and muscular rigidity. Nausea and vomiting occurred in less than half of the cases. Evidence of free fluid or gas within the peritoneal cavity was rare. The incidence of complete vasomotor collapse was infrequent. It is important, however, to reemphasize the early signs of vasomotor imbalance, such as pallor, diaphoresis, early tachycardia and abnormal blood pressure. These signs are a common feature immediately after accidents. The danger of waiting for signs of peritonitis, gross intestinal hemorrhage or severe shock cannot be overemphasized. External evidence of abdominal injury was present in only 16 of our 36 cases.

METHOD OF TREATMENT

The decision as to when to operate on patients with injuries of the type described requires keen clinical judgment. The importance of instituting treatment promptly is self evident when one compares the mortality in group A with that in group B. We believe it is sometimes wiser to risk an unnecessary abdominal operation (the mortality is low) while the patient's condition is still good than to delay operation, since in cases of perforation there is always a great increase in the mortality. However, since intraperitoneal and extraperitoneal hemorrhage without intestinal perforation may simulate rupture of a hollow viscus, the decision as to when to operate is exceedingly difficult in some cases.

The preoperative treatment for shock and dehydration is of paramount importance. When possible the choice of the anesthetic agent should rest with the specially trained anesthesiologist.

The operative procedure should be thorough but non-shocking. One must guard against overoperating. The choice of a method of intestinal repair varies according to the number and size of the lesions, the viability of the intestine and the general condition of the patient. Simple closure of the perforation, resection of the bowel and even exteriorization of the bowel in cases of severe injury are the most common procedures. Sometimes when resection is indicated and time is a factor the

Murphy button may be used to advantage. The question of cleansing the peritoneum is frequently raised. It is our opinion that the gross foreign bodies should be picked off carefully and the contaminated loops of bowel should be cleansed locally with physiologic solution of sodium chloride. This may be done by removing the affected loops from the abdomen and then rinsing them or occasionally by irrigating the loops intra-abdominally in the natural basins which may be formed by rolling or tilting the patient. Irrigation of the entire peritoneal cavity should be avoided. In cases of gross contamination in which treatment is instituted late the local implantation of sulfanilamide or a derivative within the peritoneal cavity and in the abdominal wound may prove a useful adjunct to therapy. This implantation is not advocated as a routine procedure until more convincing experimental work has been done. Closure of the abdominal wall should preferably be done by an expeditious but safe method, such as the use of through and through silver wire or silkworm gut sutures. Drainage of the general peritoneal cavity should not be attempted because of the attendant dangers and inadequacy.

Postoperative care should include adequate intestinal decompression. Proper electrolyte, protein and fluid balances are to be regulated by a careful recording of the fluid intake and output, hematocrit and plasma protein determinations and frequent determinations of the blood chloride levels. Sulfanilamide, sulfathiazole or sulfapyridine administered orally or parenterally is of distinct value in the postoperative care.

SUMMARY AND CONCLUSIONS

The problem of subparietal intestinal injury is concerned with early diagnosis, which in turn calls for prompt treatment before the development of peritonitis. Even under the most favorable circumstances (as in group B) the mortality is 35 per cent, which must be considered high in comparison with that for other surgical procedures, but this figure is doubled (becoming 70 per cent) when operation is performed after the onset of complications (as in group A).

Study of the cause of injury in 1,476 cases revealed the interesting fact that a high percentage of injuries were produced by a relatively small variety of accidents. These included injuries received in personal encounters in which the patient was struck or kicked or fell on the abdomen. Distention of the intestine with food or fluid contributed to the likelihood of rupture, as was evidenced by the fact that many injuries were received soon after the patient had eaten. In industrial accidents, another type, the damage was produced by a blunt object, such as an iron bar or a piece of timber, striking the abdomen with considerable force. The third type of accident by which intestinal injuries were produced was concerned with transportation, the accidents involving the automobile, motorcycle, train, street car, airplane and bicycle, frequently moving at a fast rate of speed. In accidents of this type many forces were applied simultaneously, in that the patient was in motion in one direction and came forcibly against a fixed object or an object moving in the opposite direction, so that a severe crushing injury was produced.

Since it is unquestionably true that intestinal rupture may take place beneath an intact and unbruised abdominal wall and that in some cases no symptoms can be detected during the early hours after injury, if the present high mortality is to be lowered, earlier

surgical intervention is required, and the decision to operate must be based in many instances on intelligent suspicion alone. This suspicion should necessarily be built on a careful study of the accident, with particular emphasis on the exact details of how the abdomen was struck. If the type of accident elicits suspicion, the patient should be observed for four to six hours, and if abdominal pain or tenderness on pressure can be evoked the indications for operation are adequate. A constant rise in the pulse rate makes such a procedure imperative. Decision not to operate is many times more dangerous than the hazards of an unnecessary exploration.

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ABSTRACT OF DISCUSSION

DR. W. L. ESTES JR., Bethlehem, Pa.: In reviewing 2,217 consecutive cases of injuries of all types in our clinic we found that 32 represented abdominal trauma, an incidence of 1.4 per cent. Cody has reported deaths from trauma in Iowa in a three year period as being 5,744 with 53 abdominal traumatic cases, an incidence of 0.9 per cent. Clinically, abdominal trauma may be divided into (1) severe multiple injuries which are rapidly fatal but for which no treatment is of avail, (2) cases that obviously require immediate operation and (3) cases in which the diagnosis is doubtful and the indications for or against operation are not clear. In the proper care of this third group lies the greatest opportunity for saving lives and lowering the extraordinarily high mortality rate. All cases of abdominal trauma, no matter how trivial, in which a decision for operation cannot be immediately made should be kept under the closest observation. There are many cases of abdominal injury on record in which the symptoms of onset were apparently trivial but later, within four or five hours, definite evidence of a severe abdominal lesion, requiring operation, developed. With delay in operation, frequent reexamination should be made at least every thirty minutes—until definite conclusion for or against operation can be reached. Repeat blood counts should be taken every thirty minutes, and no opiate should be given. The upper jejunum and the terminal ileum are the most common locations for subcutaneous rupture or laceration of the intestine, because in these locations the mesentery is short and compression against the vertebral column can occur. Persistent or recurring pain and persistent vomiting with increasing pulse rate are most important. Boardlike, general or localized rigidity and symptoms of a spreading peritonitis will be present in the outspoken case. In the doubtful case an abdominal roentgenogram to demonstrate subdiaphragmatic free air may be helpful but, if negative, does not eliminate the possibility of intestinal rupture. Successful treatment depends entirely on the magnitude of the injury, early diagnosis of rupture, prompt decision that an operation is necessary and the correct time for and method of operative intervention. Decision for or against operation should be made within four or six hours of the accident. It is only by prompt recognition and early operation that the surprisingly high mortality in this deceptive lesion can be effectively reduced.

Unnecessary Investigations.—I admit that there are many occasions, many diseases, many patients who demand any or all of those investigations. What I object to, and what many patients object to, is that they are demanded every time, and they cost money. Indeed, this constant demand for widespread and often unnecessary investigations provides a large part of the reason for the familiar complaint that modern medicine is so expensive. Of course it is expensive if the patient has to run the gamut of all the specialties before he can be told he has a cold in the nose: Judicious selection of the investigations necessary to arrive at a diagnosis is as much a part of the physician's duty as a judicious selection of drugs in treatment.—Atkinson, Miles: *Behind the Mask of Medicine*, New York, Charles Scribner's Sons, 1941.

THE SIGNIFICANCE OF NECROTIZING PYELONEPHRITIS IN DIABETES MELLITUS

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While the physician treating patients with diabetes mellitus devotes much attention to the early discovery of infections, the importance of the infections involving the urinary tract has been underestimated. It is our purpose in this paper to discuss a severe form of urinary tract infection in patients with diabetes and the stages by which the final changes come about. The end result is a necrotizing pyelonephritis with extensive destruction of renal tissue. This complication of diabetes, unless recognized in its incipience, leads to a fatal termination. Most of the features of this form of pyelonephritis are seen occasionally in patients not suffering from diabetes. However, the severity, rapid progression and extent of necrosis of renal tissue are hardly to be found in the absence of diabetes.

In some recent surveys of the complications of diabetes, the infections of the urinary tract have not appeared especially common.¹ However, in others,² urinary infection has been regarded as a frequent and serious complication of diabetes. The urologist usually sees patients with diabetes after infection is already advanced and often only when irreversible impairment of renal function has occurred. It appears desirable, therefore, to emphasize the incidence of urinary tract infections in patients with diabetes and especially to investigate the early stages of such infections.

Ophüls'³ studies indicate that 4 per cent of persons coming to necropsy have an infection of the upper urinary tract which may or may not have been the cause of death. It has been demonstrated that about 20 per cent of people dying of diabetes mellitus have infection of the kidneys.² Thus, renal infection is found at necropsy five times as frequently in patients with diabetes as in the population at large.² However, a much smaller percentage of patients with diabetes are found to have urinary infection during life.⁴ It is reported that 6 per cent of 4,500 patients with diabetes mellitus had urinary infection and only 4 per cent needed urologic investigation.⁵ The discrepancy between 20 per cent at necropsy² and 6 per cent in life⁶ is too great to be accounted for by terminal infection alone. The lack of symptoms in the earlier stages and the consequent difficulty in recognizing the infection probably accounts in part for the discrepancy. It seems that a further search for bacteria in the urine of patients without symptoms of urinary tract disease would lead to finding the earlier stages more frequently and hence to earlier therapy.

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From the Departments of Surgery and Pathology of the Harvard Medical School and the Urologic and Pathologic Services of the Peter Bent Brigham Hospital.

1. Joslin, Elliott P.: *Diabetic Hazards*, New England J. Med. 224: 589-592 (April 3) 1941. Wilder.¹¹

2. Baldwin, Arthur D., and Root, Howard F.: *Infections of the Upper Urinary Tract in the Diabetic Patient*, New England J. Med. 223: 244-250 (Aug. 15) 1940.

3. Ophüls, William: *A Statistical Survey of Three Thousand Autopsies: From the Department of Pathology of the Stanford University Medical School*, Stanford Univ. Publ., Univ. Series, M. Sc. 1: 127-370, (Nov.) 1926.

4. Wilder.¹¹ Pool.⁵

5. Pool, T. L.: *Urological Diseases in Patients with Diabetes Mellitus*, Thesis, Minnesota University Graduate School, 1939, quoted by Wilder.¹¹

In order to determine the incidence of asymptomatic bacteriuria in ambulatory patients, a group of 50 unselected diabetic patients was compared with another group of patients of similar age distribution in whom diabetes was not present. Although the group investigated is small, the results of the study are so definite that the inclusion of these data seems warranted. While the numbers were small, care was taken to have different age groups equally represented in the two series. Furthermore, the findings have been recorded as negative unless the bacteria or white blood cells were abundant. All female patients were catheterized; the specimens from male patients were voided after careful cleansing of the glans. The presence of bacteria was determined in unstained smears of the urinary sediment after centrifuging. The results were confirmed and the gross classification of the organisms established in smears stained by the method of Gram. The results are given in table 1. It will be noted that bacteria were present in the urine of 27 of the diabetic patients while

organisms found by culture include most of the common invaders of the urinary tract. The incidence of staphylococci is greater than would have been expected from studies in the literature.⁶

In the well controlled diabetic patient, these urinary infections are usually asymptomatic. Their significance lies in the part they play when the patient's resistance is lowered by adverse circumstances. The peculiar fulminating form of necrotizing pyelonephritis to be described may well arise from these mild asymptomatic and often neglected instances of urinary infection in patients with diabetes.

The severe renal infections become manifest clinically by the appearance of fever, pain, hematuria and pyuria. Necrosis of the renal papillae is demonstrable on further investigation. Günther,⁷ in describing necrosis of the renal papillae in 10 patients, pointed out that diabetes was present in 7 of them. This stage has been demonstrated by pyelography.⁸ Necrosis of the pyramids is by no means confined to pyelonephritis complicating diabetes. As Mallory, Crane and Edwards⁹ have pointed out, involvement of the renal pyramids is one of the early lesions of experimental pyelonephritis. Furthermore, the papilla is the most frequent site for the origin of "primary" renal calculi.¹⁰ The irregular filling defect produced in the pyelogram by necrosis of the renal papilla in pyelonephritis bears a striking resemblance to that produced in renal tuberculosis, as shown in the accompanying illustration.

We present in detail the clinical and pathologic findings in 3 patients with progressively more severe necrotizing pyelonephritis complicating diabetes. Case 1 showed changes in the pyelogram early in the disease very much like those found in renal tuberculosis but due to necrosis of the renal papilla as the result of infection with pyogenic organisms. Case 2 presented a more extensive necrotizing infection which terminated fatally. In case 3, study of the kidneys revealed almost complete necrosis of renal tissue. The 3 cases indicate some of the stages through which low grade renal infection manifested only by bacteriuria passes to almost complete necrosis of the kidney.

CASE 1.—Miss V. M., aged 24 years, entered the hospital because of weakness and vomiting for several days. She had received treatment for severe diabetes mellitus over a period of eleven years. One year before admission she was treated for diabetic neuritis and six months before began to experience macroscopic hematuria. A month before, urinary infection due to *Escherichia coli* was discovered and treated unsuccessfully with mandelic acid and sulfanilamide.

The patient was found emaciated, with a temperature of 103 F. and a dry, red tongue. The blood pressure measured 120 mm. of mercury systolic and 60 mm. diastolic. Nothing abnormal was found on examination of the chest. There was diffuse abdominal tenderness but none in the flanks, and neither kidney was palpable. There was hyperesthesia over the left thigh and on the soles of both feet. Ankle jerks were absent, and the patellar reflexes were hypoaactive. The Wassermann and Hinton tests were negative. Urinalysis showed a specific gravity of 1.022, a slight trace of albumin, sugar 4 plus,

6. Braasch, W. F.: Clinical Data Concerning Chronic Pyelonephritis, *J. Urol.* **39**: 1-33 (Jan.) 1938.
7. Günther, G. W.: Die Papillennekrosen der Niere bei Diabetes, *München. med. Wchnschr.* **84**: 1695-1699 (Oct.) 1937.
8. Olsson, Olle: Spontaneous Gaspelogramme, *Acta radiol.* **20**: 578-584 (Dec.) 1939. Günther,⁷
9. Mallory, G. K.; Crane, A. R., and Edwards, J. E.: Pathology of Acute and Healed Experimental Pyelonephritis, *Arch. Path.* **30**: 330-347 (July) 1940.
10. Randall, Alexander: Papillary Pathology as a Precursor of Primary Renal Calculus, *J. Urol.* **44**: 580-589 (Nov.) 1940.

TABLE 1.—Bacteria in the Urine

Decades	50 Diabetic Patients			50 Nondiabetic Patients		
	No. in Decade	Bact.-uria	Pyuria *	No. in Decade	Bact.-uria	Pyuria *
Second .	3	0	0	3	0	0
Third....	2	2	0	2	0	0
Fourth .	2	2	0	3	0	0
Fifth...	10	5	1	10	0	0
Sixth..	14	9	4	12	2	1
Seventh	15	7	1	15	1	0
Eighth	4	2	2	5	1	1
	50	27	10	50	4	2

* There were no cases of amicrobial pyuria. The patients with pyuria are also listed in the heading of bacteriuria.

TABLE 2.—Presence of Bacteria in Urine of Patients with Diabetes as Disclosed by Culture

<i>Staphylococcus albus</i> .	12
<i>Staphylococcus aureus</i>	14
	4
	8
	1
<i>Staphylococcus albus</i> and <i>Enterococcus</i>	4
<i>Escherichia coli</i> and <i>Enterococcus</i> .	3
No growth	4

in the nondiabetic group bacteria were demonstrable in only 4.

Though the significance of bacteria as the only abnormality in the urine may well be questioned, the added presence of pyuria means that invasion of tissues by pathogenic organisms has taken place. The fact that pyuria was found in 10 of the diabetic patients but in only 2 of the nondiabetic group thus becomes of special significance.

Numerous bacteria were present in the urine six or seven times as frequently when diabetes was present as when it was absent. Pyuria was found five times as often among the patients with diabetes as among the controls.

Cultures were made from the urines of patients with diabetes but not from those of the control group. The results are given in table 2. The presence of bacteria in the urine was detected more often by culture than by examining the urinary sediment directly. This discrepancy is accounted for by the fact that the cultures are positive when organisms are present, regardless of their numbers; we judged the sediment negative when studied directly unless bacteria were found in abundance. The

tone 1 plus. There were many leukocytes and occasional erythrocytes in each high power field. The hemoglobin of the blood measured 82 per cent (Sahli), the erythrocyte count was 4,260,000 per cubic millimeter, the leukocyte count was 12,800 per cubic millimeter and the smear showed 90 per cent polymorphonuclear leukocytes and 10 per cent lymphocytes. Culture of the urine from the bladder yielded a growth of *E. coli*. The blood urea nitrogen was 14 mg. per hundred cubic centimeters.

Cystoscopy showed a chronic vesical inflammation without ulceration. The trigon had a granular edematous appearance and the bladder was atonic. The urine from the left kidney contained large numbers of leukocytes on several examinations, while that from the right kidney contained none at any time. Phenolsulfonphthalein excretion appeared in five minutes from the right kidney and in nine minutes from the left kidney. The total excretion in ten minutes from the right was 11 per cent and from the left 1 per cent. Cultures from the left kidney yielded a profuse growth of *E. coli* and from the right were negative.

The diabetes was controlled by diet and insulin. However, the patient continued to have a fever in the evening which varied from 100 to 103 F. There was no demonstrable response to



A left retrograde pyelogram in case 1, showing irregularity of a middle calyx and to a less extent of a superior calyx. This is the result of necrosis in the renal papillae. The changes shown in the pyelogram bear considerable resemblance to those produced by early renal tuberculosis.

either sulfanilamide or sulfathiazole. Pyelograms showed distortion of the left renal pelvis, as shown in the illustration.

Left nephrectomy was performed under ether anesthesia. On the third postoperative day the temperature rose to 104 F. and the leukocyte count of the blood to 22,000 per cubic millimeter. The blood urea nitrogen rose to 61 mg. per hundred cubic centimeters and the blood sugar to 770 mg. per hundred cubic centimeters on the fourteenth postoperative day. One week later the right kidney was tremendously enlarged and easily palpable yet nontender. The signs were those of a diffuse pyelonephritis with no evidence of either nephric or perinephric abscess. Improvement was slow but, as infection cleared, the diabetic state became controlled and renal function improved. The patient was discharged from the hospital three months after operation still showing evidence of a chronic urinary infection but the nonprotein nitrogen of the blood had returned to normal. Six months later the patient was well; she had gained 55 pounds (25 Kg.). However, since urinary infection persisted, the prognosis remained guarded.

The kidney removed at operation measured 12 by 6 by 5 cm. From the reddish brown external surface there projected many yellowish white knobby elevations which varied from 2 to 5 mm. in diameter and which were raised 1 or 2 mm. above

the surrounding parenchyma. The markings of the cut surface were irregular. Small white areas were present in the cortex and outer part of the medulla; these were continuous with the elevations on the exterior. The surface of the pelvis was dull grayish white. No areas of ulceration were encountered.

Examination by microscope showed streaklike areas of inflammation extending through the kidney from pelvis to cortex. In these areas the glomeruli were fibrosed and the tubules somewhat dilated. The interstitial connective tissue was increased in amount and was infiltrated with many lymphocytes and a smaller number of polymorphonuclear leukocytes. A few gram-negative bacilli were found in the sections. The knobby elevations were composed of areas of scar tissue in which all traces of renal parenchyma had been destroyed. The arterioles about these areas of scarring displayed moderate arteriosclerosis but no organized thrombi were seen. There was an extensive lymphocytic infiltration of the subpelvic tissues as well as an increase in connective tissue in this region.

The urinary infection was well advanced for months before its recognition and treatment. When the patient came to the hospital, chemotherapy was without effect. The lack of response is partly explained by failure of the drug to penetrate tissues whose circulation has been greatly diminished by chronic infection and partly by the fact that the diabetic state could not be satisfactorily controlled in the face of persistent infection. Atony of the bladder with accompanying residual urine played an important role in prolonging infection, particularly after operation. There were other evidences of neurogenic disturbances in addition to the vesical disorder, such as hyperesthesia of the legs and feet and loss of tendon reflexes. The hazard of nephrectomy for unilateral pyelonephritis is demonstrated by the extensive infection of the remaining kidney after operation.

Examination of the kidney after removal showed nodular areas of scarring, representing the end result of necrosis of renal tissue. There was evidence of active infection in other parts of the kidney. The process, then, is regarded as one which is progressing in some places and healing or healed in others.

CASE 2.—Mrs. E. B., aged 46, came to the hospital because of intermittent attacks of hematuria, frequency of urination, chills, fever, abdominal pain, nausea and vomiting. Mild urinary symptoms had been present for eight months, and the other symptoms had appeared during the previous two weeks. Seventeen years earlier she had had an attack of acute pyelonephritis during a pregnancy which ended in miscarriage. Eleven pregnancies resulted in nine healthy children, one stillbirth and the miscarriage just mentioned.

Lower abdominal tenderness was the only relevant finding on physical examination. The urine contained large numbers of leukocytes and erythrocytes; there was a slight trace of albumin and 2 plus sugar. Renal excretion of phenolsulfonphthalein was measured at 65 per cent the first hour and 25 per cent the second hour. The nonprotein nitrogen of the blood was 31 mg. per hundred cubic centimeters. The only abnormality demonstrated in intravenous urograms was dilatation and irregularity of the right renal pelvis. At cystoscopic examination the bladder was found to be diffusely inflamed; no other cause for hematuria was discovered. Cultures of the urine yielded a growth of *Staphylococcus albus* and non-hemolytic streptococcus.

After the patient had been treated for twelve days, improvement of the infection occurred and it was possible to control the diabetes by diet alone. The patient was discharged to the outpatient department, where treatment was continued but pyuria persisted.

Five months later dilation and curettage of the uterus was performed for postmenopausal bleeding. This was followed by a febrile reaction and an acute exacerbation of urinary infection. At cystoscopic examination under evinal anesthesia the

mucous membrane of the spastic bladder was covered with a shaggy gray exudate. Ureteral catheters could be passed only 3 cm. on each side. During the next three days the nonprotein nitrogen of the blood rose to 70 mg. per hundred cubic centimeters and the blood sugar to 350 mg. per hundred cubic centimeters, but sugar and acetone did not appear in the urine. The temperature varied between 102 and 103 F. The output of urine gradually diminished in spite of an intake of 3,000 to 5,000 cc. of fluid a day. Though the urinary output was reduced to 200 cc. a day the specific gravity of the urine did not exceed 1.010. The left kidney was palpable and tender. Incision and drainage of the left perinephric abscess and left nephrotomy were performed under local anesthesia. Death occurred soon after operation.

The anatomic diagnoses were acute and chronic pyelonephritis with necrosis and abscess formation, bilateral; multiple perinephric abscesses, bilateral; nephrostomy, recent; acute and chronic cystitis and ureteritis; peritonitis, generalized; glycogen in liver cell nuclei and in kidney.

The right kidney weighed 240 Gm., the left 360 Gm. Both kidneys were surrounded by fat tissue containing numerous small and large abscesses. After this tissue was removed there were uncovered numerous abscesses, some as large as 1.5 cm. in diameter. Beneath the intrinsic capsule was an accumulation of purulent material resulting from rupture of abscesses near the surface of the parenchyma. The kidney markings were almost completely obliterated, and but little uninvolved parenchyma could be made out. The grayish yellow renal tissue was very soft in consistency. The two kidneys were about equally involved in the process, although localized abscess formation was more conspicuous in the left kidney than in the right.

Microscopically the abscesses in the peripelvic fat were found to be composed of necrotic tissue, polymorphonuclear leukocytes and bacteria in large clumps. The general architecture of the renal parenchyma was very much obscured by numerous abscesses like those in the perinephric tissues. The amount of necrosis of renal tissue was large and the abscesses were almost bordering one on the other. Huge clumps of bacteria were found at the center of the abscesses. In the portions of renal tissue not involved in the necrosis there was intense engorgement of blood vessels. Glycogen deposits were found in the cytoplasm and nuclei of the convoluted tubules. The interstitial tissue was increased in amount and was infiltrated freely with lymphocytes and polymorphonuclear leukocytes. The subpelvic tissues showed a similar inflammatory cellular infiltration. The arteries and arterioles showed minimal sclerotic changes. While a few contained small thrombi, the degree of thrombosis did not appear out of proportion to the extent of the inflammatory reaction.

This patient, when first seen, had mild diabetes mellitus and a urinary infection which had been present for several years. In retrospect it is apparent that the latter condition was never adequately controlled. If treatment with sulfonamide compounds had been available at that time, the progress of the infection might have been arrested. However, as shown by case 1, the administration of these drugs must be started early in the course of the disease. While this is important in all instances of pyelonephritis, it assumes even greater significance when the pyelonephritis is complicated by diabetes. The fatal exacerbation of infection in this case followed dilation and curettage of the uterus under ether anesthesia. At necropsy the necrosis of tissue and abscess formation was very extensive. Even if the patient could have survived the infection, the loss of parenchyma would have been too great for renal function to continue satisfactorily.

CASE 3.—Mrs. E. F., aged 46, was admitted to the hospital because of fever, prostration, pain in the flanks and vomiting. The onset of symptoms began with a chill five days previously.

Prior to that time she had appeared well and there were no urinary complaints. Eleven years before, during pregnancy, she was told that she had diabetes and hypertension. No regular treatment of either condition was carried out after delivery.

On arrival, the patient was stuporous. The temperature was 104 F., the respiratory rate 35 per minute and the pulse rate 110 per minute. The mucous membranes were dry and the tongue was coated. Scattered rales were heard at the bases of both lungs. The heart was not enlarged. The abdomen was distended and there was a large rounded, nontender mass in the right flank which extended from beneath the costal margin almost to the iliac crest. A similar but smaller mass could be felt in the left flank. There were scattered areas of hyperesthesia over both lower extremities. The patellar and achilles reflexes were absent on both sides.

A plain roentgenogram of the abdomen showed the stomach and several loops of small intestine to be distended with gas. Cystoscopic examination was performed the next day. The bladder contained 200 cc. of foul smelling, bloody urine, and thorough irrigation was necessary to clear the medium. The entire interior of the bladder was covered with adherent clotted blood and gray exudate in the irregular areas.

The Wassermann reaction of the blood was negative. The nonprotein nitrogen of the blood measured 95 mg. per hundred cubic centimeters and the total protein 5.8 Gm. per hundred cubic centimeters with albumin 3.1 Gm. per hundred cubic centimeters and globulin 2.7 Gm. per hundred cubic centimeters. The urine contained a trace of albumin, sugar 1 plus and no acetone, but large numbers of leukocytes and erythrocytes. Studies of the blood showed a hemoglobin content of 75 per cent, erythrocyte count 3,600,000 and leukocyte count 7,900.

A diagnosis of bilateral renal infection was made. Right nephrostomy was thought indicated. Under local anesthesia the right renal fossa was exposed and found occupied by a dense mass of infected, necrotic tissue containing many bubbles of gas. The kidney was a tense, discolored, crepitant sac of necrotic tissue which, when opened, allowed the expulsion of foul smelling gas, clotted blood and urine. Drainage was instituted. The patient died four hours after the operation.

The anatomic diagnoses were acute pyelonephritis with multiple abscesses, extensive, bilateral; infarction and gangrene of kidneys, extensive, bilateral; necrosis of adrenals, extensive, bilateral; cystitis emphysematosa; peritonitis, generalized; pneumoperitoneum; acute splenitis.

The fat in each renal fossa was necrotic and reddish black, with a few yellow areas. Adjacent to both kidneys there were large masses of clotted blood. Both adrenals were reduced to a mass of friable, necrotic material; no viable adrenal tissue could be found. The kidneys were markedly increased in size, the right more so than the left. The renal parenchyma was extremely soft, friable and necrotic. It was infiltrated with numerous bubbles of gas, as were the surrounding tissues. Such structures as the cortex and the medulla could not be identified in the reddish black mass of renal tissue. There were no thrombi visible grossly in the larger branches of the renal arteries and veins.

E. coli was obtained in culture from material in the renal fossa taken at operation, and the same organism from the blood of the heart at autopsy.

There was but little renal tissue which even approached normal in morphology. Abscesses, mostly small, were scattered through the parenchyma in large numbers. The abscesses contained huge masses of bacilli morphologically consistent with *E. coli*. The tissue among the abscesses showed most extensive anemic infarction. Only after search could one find small groups of relatively normal glomeruli and tubules. Even in these regions there was heavy polymorphonuclear leukocytic infiltration. Slight intimal thickening was found in the medium sized and larger arteries. Many vessels near the abscesses contained partially organized thrombi. As these thrombi were traced into larger vessels they showed progressively less and less evidence of organization. In the largest vessels there was a thin layer of unorganized fibrin over the surface of the intima.

This patient's course is fully accounted for by the fulminating pyelonephritis due to *E. coli*. The urinary infection had probably been present long before the onset of the terminal illness. However, the patient had no symptoms referable to such an infection until five days before she was admitted to the hospital. The rapid progression of the infection was favored by the presence of diabetes mellitus, which had not been treated for years. The possible significance and gravity of urinary infection as a complication of diabetes is emphasized by the course of events in this case.

At necropsy the kidneys showed a most unusual degree of pyelonephritis with multiple abscesses and, in addition, very extensive infarction and gangrene. It is apparent that the regions of infarction resulted from thrombi which had their origin in small vessels about some of the abscesses. From these sites the thrombi were propagated centripetally, thereby leading to infarction of progressively larger areas of renal tissue. The lesion represents a fulminating pyelonephritis of an extent and degree not found elsewhere in our material and in few cases recorded in the literature. The complete necrosis of both adrenal glands resulting from extension of the renal infection probably was an important factor in the rapid course and fatal termination of the disease.

One would have expected, perhaps, that a renal infection with so many unusual features would have been caused by an uncommon organism. Our cultures, however, yielded only *E. coli* in spite of the fact that they were prepared aerobically, anaerobically and under partial carbon dioxide tension. A few gram-positive bacilli were also seen in direct smears, but they did not grow out in culture. The large masses of bacteria seen in sections of the kidneys were all gram-negative bacilli and hence were entirely compatible with the cultural findings. *E. coli* has been found in similar cases recorded in the literature.¹¹ There are two factors to be considered: one, the nature of the organism, the other, the resistance of the tissues invaded. The findings indicate that it was the second which was responsible for the end result in this case.

THE DEVELOPMENT OF NECROTIZING PYELONEPHRITIS

The ease with which infections are set up in the diabetic state would suggest that bacteria in the urinary tract are at least a potential hazard and one to be much more seriously regarded in the presence than in the absence of diabetes. When pyuria is present (as it was in one fifth of our series of unselected patients with diabetes) it may be assumed that a locus of infection has already been set up in the urinary tract and destruction of tissue has begun. These are the initial steps leading to the disastrous renal infections which have been discussed in the three cases just presented.

Once the infection has gained a foothold, its spread is greatly favored by the presence of diabetes. Thus infections which would be walled off in an otherwise healthy individual tend to spread so as to involve progressively greater amounts of tissue. One of the characteristics of the inflammatory reaction to certain organisms, especially the staphylococcus, is the formation of thrombi about the lesion. These thrombi tend to prevent extension of the infection by closing endothelial lined channels. Such thrombi occur in infections,

whether or not diabetes is present. In cases 1 and 2 the thrombi seemed to be in proportions commensurate with those expected to accompany that particular degree of infection. However, in case 3 the thrombi were propagated centripetally. The oldest and most completely organized ones were in small vessels about the areas of infection. The fresher and less organized thrombi were in larger vessels. The propagation of the thrombi, then, must be regarded as an important factor in the extreme degree of necrosis seen in the kidneys in case 3. Abscesses are frequent in many types of renal infections, but such extensive necrosis as that found here is comparatively rare. For this reason the diabetic state seems important in contributing to the end result.

THE RECOGNITION OF URINARY TRACT INFECTIONS IN PATIENTS WITH DIABETES

Certain simple measures may be adopted which will help to make an earlier diagnosis of urinary infection in patients with diabetes. Questions should be directed toward uncovering an alteration of urinary habits and instructions given as to the importance of any change encountered. Unfortunately, the patient who has had polyuria for years as a result of uncomplicated diabetes does not see a warning signal in increased frequency of micturition and may only diminish his fluid intake instead of consulting his physician immediately. The delayed appearance of prominent symptoms demands careful interrogation as to mild dysuria, nocturia, vesical discomfort and pain in the flank. In addition, any systemic manifestation which indicates that the diabetic state has become worse suggests a search for infection, and it is to be remembered that involvement of the urinary tract is not uncommon. Examination of the genitalia leads to the early discovery of phimosis, adherent prepuce (4 of 27 men examined), balanitis, pruritus vulvae and cervicitis. All these conditions may be the antecedents of serious infection in the patient with diabetes. Enlargement of the kidney or perinephrium may be discovered by abdominal palpation before any local symptoms have appeared. In addition to ordinary urinalysis, examination of the stained urinary sediment is of particular value in the early recognition of bacteria in the urine. When present, these should be verified by cultures. If bacteria are found on repeated examination, they should be considered as indicating an active stage of infection even in the absence of pyuria in the patients with diabetes. Glycosuria should of course be controlled and if bacteria continue to be present prompt investigation and treatment should be instituted. It is recommended that in addition to a search for foci of infection, a plain roentgenogram of the abdomen be obtained. Intravenous urography and cystoscopic examination are suggested if they seem appropriate for the study of the individual patient.

Pneumaturia¹² is more common in urinary tract infections in patients with diabetes than it is when this complication is absent. The condition is usually manifested by interrupted urination, which makes the patient aware of the passage of gas. *E. coli*, *Bacillus lactis aerogenes*, yeasts and *Clostridium perfringens* are the organisms that have been found. Analysis of the gas has indicated the presence of carbon dioxide, hydrogen, nitrogen and methane. As a result of fermentation of the urine, butyric acid, lactic acid and alcohol have been

11. Schauwecker, Karl: Ueber Nierenvenenthrombose; Ein Fall mit Gasbildung in der Niere bei Pyelonephritis und Diabetes; Ein Fall bei Amyloid, Virchows Arch. f. path. Anat. 274: 197-214 (Nov. 14) 1929.

12. Riley, Francis, and Bragdon, Floyd: Pneumaturia in Diabetes Mellitus: Report of Cases, J. A. M. A. 108: 1596-1599 (May 8) 1937.

recovered. The gas may be formed not only in the urine but also in the tissues of the kidney and bladder in severe forms of infection. Large amounts of gas in the renal tissues were seen at operation in case 3. Olsson⁷ has also demonstrated the presence of gas in the renal pelvis by roentgenograms. There have been several reports¹³ of cystitis emphysematosa in which the vesical wall is the site of multiple blebs filled with gas. This condition was present in case 3.

If beneficial therapy is to be instituted, it is necessary that infection be discovered early. Chemotherapy is well tolerated if the diabetic state can be controlled. Regulation of the diabetes, however, is difficult once infection has gained the upper hand. When a chronic inflammatory process has been established, impairment of circulation (by fibrosis, suppuration and thrombosis) prohibits an effective permeation of the tissues by a chemotherapeutic agent. Early drainage of infection, a proper diet, forced fluids and increased administration of insulin are general measures which apply in the treatment of any type of infection in the patient having diabetes mellitus. We have in sulfathiazole an effective agent for combating staphylococcal infections in general, but its efficacy in the management of urinary tract infections is limited by the factors outlined. Prophylactic use of this drug in small doses for patients with diabetes when bacteria are found in the urine in the absence of symptoms referable to the urinary tract may prevent the development of a serious infection with destruction of renal tissue.

Maintenance of the caloric intake is of particular importance in chronic infections. The insulin requirement is greatly increased in the face of infection and, as Wilder¹⁴ has pointed out, the patient may need insulin then even if he did not need it before. The maintenance of fluid intake at as high a level as possible is of great importance for the patient with diabetes complicated by renal infection and cannot be over-emphasized. When surgical intervention is necessary, local anesthesia is much to be preferred to any form of general anesthesia. The introduction of any factor which tends to cause dehydration increases the difficulty of controlling acidosis.

In the treatment of these infections, it is of the utmost importance to bear in mind that destruction of renal tissue must be prevented or stopped at the earliest possible moment. Parenchyma, once destroyed, cannot be replaced. Not only is the loss of renal tissue important in itself but there may also be serious consequences outside the kidney because of the production of vascular lesions in many organs.¹⁵

CONCLUSIONS

1. Asymptomatic urinary infections are much more frequent in patients with diabetes than in those without this condition.

2. The asymptomatic urinary infections in the diabetic state may lead to serious lesions of the kidneys. Necrosis of renal tissue extends rapidly, once the infection gains a foothold. It is increased in some cases by centripetal propagation of thrombi which form about the areas of infection.

3. A consideration of the end results of urinary tract infection in patients with diabetes emphasizes the importance of treating the infections before irreplaceable tissues have been destroyed.

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ABSTRACT OF DISCUSSION

DR. THOMAS P. SHUPE, Cleveland: The clinician as well as the pathologist does not know much about the subject. That it occurs quite frequently in diabetes has been shown by Guenther, whom the authors mentioned, and that was brought out in 1937. The authors cited 1 case of a man aged 60 with no sugar in the urine and ascending urinary infection. He had a hydronephrosis and blockage by a large stone in the ureter. The kidney removed showed extensive papillary necrosis. On investigation the blood sugar showed an elevation of 170 to 200. Later, death and autopsy revealed the same necrosis on the other side. The difficulty with these cases has been that the diagnosis was made in reverse; that is, from the autopsy table back to the laboratory. The nondiabetic may show papillary necrosis, but nobody has reported such cases except in the advanced cases of carcinoma of the prostate and of the bladder. The pathologist making an autopsy on a patient with a dilated stomach and fatty degeneration of the liver, a yellow cranium and a firm brain should look for the papillary necrosis and other signs of diabetes. There is no doubt that the diabetic patient is subject to many hazards even if he has sugar in the urine. The diabetic patient without sugar in the urine is perhaps subject to a great many more hazards, and, next to the toes, perhaps the genitourinary system is the most vulnerable. The authors have shown in the slides the papillary necrosis which occurs in these cases. It is a question how much diagnostic and operative procedure should be done in these cases. I should think as little as possible. Whether a retrograde pyelogram is justifiable until the diabetes is well under control is another question; certainly no surgical procedures are except for unblocking of obstruction in the genitourinary tract. Another lesion that must be considered in this connection is the cord bladder with degeneration of the posterior columns due to diabetes. Of course, then one is going to have the residual urine with infection and the general debilitation of the patient. From the rapidly spreading infection which exists in these cases, I think it would be well in all cases of genitourinary infection and obstruction to investigate the level of the blood sugar as well as the blood urea, the nitrogen and the creatinine.

DR. ORVILLE T. BAILEY, Boston: In the general behavior of any infection there are two factors to be considered: One of these is the character of the organism concerned; the other is the state and character of the tissues attacked by the organism. In the infections which we have discussed here there is a striking instance of an unusual result from a familiar group of organisms. *Escherichia coli*, staphylococci and so on have produced extensive spreading necroses. We must search for the explanation of these lesions not in the nature of the organism but in the character of the tissues infected. Certainly the presence of diabetes is important in bringing about this result. Necrosis of the papillae, in spite of the amount of attention devoted to it in the literature, can hardly be regarded as an isolated lesion. It is a part of a necrotizing process which is demonstrable clinically, especially by the retrograde pyelogram, but does not represent the whole of the condition. By the time necrosis of the papilla is demonstrable the infection has already spread far up into the parenchyma. The unusual character of response to *Escherichia coli* is especially borne out in the third case presented here. The organism produced a massive infiltration of the tissues with gas, not only of the kidneys but of the perirenal tissues, and the necrotizing process led to complete destruction of both adrenal glands. The infection not only resulted in abscesses but in almost complete gangrene of both kidneys. Careful search of the main vessels failed to show any thrombi. On careful investigation of the small vessels there were thrombi beginning peripherally and extending centrally, thus progressively shutting off the blood supply, resulting in a spreading gangrene of the renal parenchyma.

13. Mills, Ralph G.: Cystitis Emphysematosa, *J. Urol.* 24: 217-231 (Sept.) 1930. Levin, H. A.: Gas Cysts of the Urinary Bladder, *ibid.* 39: 45-52 (Jan.) 1938.

14. Wilder, Russell M.: Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia and London, W. B. Saunders & Co., 1941.

15. Weiss, Soma, and Parker, Frederick, Jr.: Pyelonephritis: Its Relation to Vascular Lesions and to Arterial Hypertension, *Medicine* 18: 221-315 (Sept.) 1939.

THE MECHANISM OF DELAYED WOUND HEALING IN THE PRESENCE OF HYPOPROTEINEMIA

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MAURICE T. FLIEGELMAN, M.D.

AND

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PHILADELPHIA

During the past decade protein deficiency has been shown to have an important influence on many of the problems of clinical surgery. Gastrointestinal motility, especially gastric emptying after anastomosis of the stomach and jejunum, was shown to be profoundly

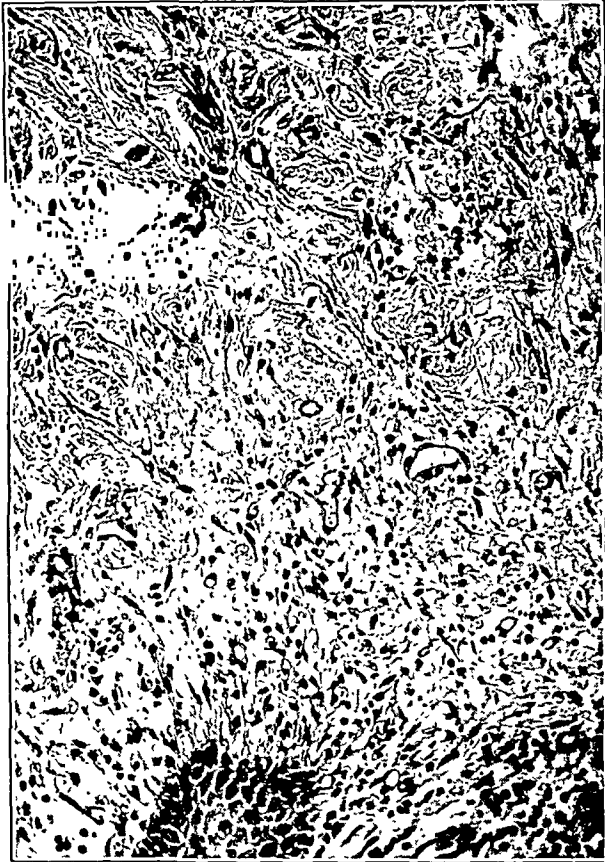


Fig. 1.—Biopsy specimen of wound in dog 511 taken seven days after the original incision. The serum protein concentration was 2.08 Gm. and the acacia level 3.52 Gm. per hundred cubic centimeters. (Reduced from a photomicrograph with a magnification of 300 diameters.)

retarded by protein depletion,¹ and it was shown that in certain instances "vicious circle" can be relieved by transfusion.² Goldschmidt, Vars and Ravdin³ demon-

strated that the protein balance of the body profoundly influences the vulnerability of the liver to chloroform. As a corollary to this principle, diets high in protein as well as carbohydrate were recommended in the treatment of patients with extensive hepatic disease.⁴ It is believed that such diets will also prove of great value in the preparation of the thyrotoxic patient for operation.



Fig. 2.—Biopsy specimen of wound in dog 42 taken seven days after the original incision. The serum protein concentration was 1.91 Gm. and the acacia concentration 2.38 Gm. per hundred cubic centimeters. (Reduced from a photomicrograph with a magnification of 300 diameters.)

The relation of hypoproteinemia to wound disruption was first demonstrated in the dog by Thompson, Ravdin and Frank⁵ in 1938. They showed that the hypoproteinemic dog is frequently incapable of normal fibroplasia. Another systemic factor interfering with wound healing is C avitaminosis. The importance of this factor was clearly demonstrated in the guinea pig by Lanman and Ingalls⁶ in 1937.

It has since been a matter of considerable interest to know whether the experimental data are of importance clinically. At the 1940 annual session of the American Medical Association, Hartzell, Winfield and Irvin⁷ reported on the serum protein and serum ascor-

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Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL by omission of figure 6. The complete article appears in the authors' reprints.

Read before the joint meeting of the Section on Orthopedic Surgery and the Section on Surgery, General and Abdominal, at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

1. Mearns, P. M.; Barden, R. P., and Ravdin, I. S.: Nutritional Edema: Its Effect on the Gastric Emptying Time Before and After Gastric Operations, *Surgery* 1: 53 (Jan.) 1937.

2. Barden, R. P.; Ravdin, I. S., and Frazier, W. D.: Hypoproteinemia as a Factor in the Retardation of Gastric Emptying After Operations of the Billroth I or II types, *Am. J. Roentgenol.* 38: 196 (July) 1937.

3. Goldschmidt, Samuel; Vars, H. M., and Ravdin, I. S.: The Influence of Foodstuffs on the Susceptibility of the Liver to Injury by [Footnote 3 continued in next column]

Chloroform, and the Probable Mechanism of Their Action. *J. Clin. Investigation* 18: 277 (May) 1939. Ravdin, I. S.; Vars, H. M., and Goldschmidt, Samuel: The Nonspecificity of Suspensions of Sodium Xanthine in Protecting the Liver Against Injury by Chloroform, and the Probable Cause of Its Action, *ibid.* 18: 633 (Nov.) 1939.

4. Ravdin, I. S.: Some Recent Advances in Surgical Therapeutics, *Ann. Surg.* 109: 321 (March) 1939.

5. Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: Effect of Hypoproteinemia on Wound Disruption, *Arch. Surg.* 36: 500 (March) 1938.

6. Lanman, T. H., and Ingalls, T. H.: Vitamin C Deficiency and Wound Healing, *Ann. Surg.* 105: 616 (April) 1937.

7. Hartzell, J. B.; Winfield, J. M., and Irvin, J. L.: Plasma Vitamin C and Serum Protein Levels in Wound Disruption, *J. A. M. A.* 116: 669 (Feb. 22) 1941.

bic acid levels of 20 patients with wound disruption. Hypoproteinemia was present in every patient, and the ascorbic acid level was low in all but 1. C. P. Rhoads⁸ has recently stated that in a group of patients



Fig 3—Biopsy specimen of wound in dog 43 taken seven days after the original incision. The serum protein concentration was 1.99 Gm and the acacia concentration 2.77 Gm per hundred cubic centimeters (Reduced from a photomicrograph with a magnification of 300 diameters)

with wound disruption encountered at the Memorial Hospital, New York, hypoproteinemia has been present more frequently than C avitaminosis. We have since had the opportunity of observing 2 patients with wound disruption in whom hypoproteinemia was present with a normal blood ascorbic acid level, and it is our impression that a protein deficit of sufficient magnitude to retard wound healing seriously is more common than a C avitaminosis of sufficient severity to have an equally deleterious effect. Rhoads and Kasinskas⁹ more recently have shown that the plasma-depleted dog is slow to form bony callus after experimental fracture.

In the animals studied by Thompson and his associates the hypoproteinemia was induced by repeated plasmaphereses, the animals being maintained on a diet containing less than 1 per cent of protein. This diet was regarded as adequate with respect to all known vitamin and mineral requirements. The serum protein level was reduced gradually over a period of two to four weeks to edema levels (usually under 3.5 Gm. per hundred cubic centimeters). It is known, from the work of Whipple¹⁰ and others, that this procedure

depletes the labile protein stores of the body. It results also in a substantial reduction in the plasma volume. Ascites is frequent as well as edema of the extremities. The intraperitoneal tissues are waterlogged, as are the muscles of the abdominal wall. It is evident, therefore, that these dogs suffer in two important regards: (1) They have been for some time in negative nitrogen balance and have a general nutritional deficit of protein, and (2) their colloid osmotic pressure is seriously reduced, with a resultant disturbance in the relation between intravascular and interstitial fluid.

It is obvious that the formation of any new cells, such as fibroblasts, requires protein. Whether this protein would have to be derived from dietary protein or from the stores of labile protein or whether it could be derived from other fixed proteins or the products of their catabolism is uncertain. There is also the possibility that the disturbed osmotic relations in the hypoproteinemic dog might interfere with the utilization of available protein for the production of fibroblasts.

While it was not possible with the means at our disposal to investigate fully the intermediary metabolism of protein, it was possible to restore the osmotic properties of the plasma of the hypoproteinemic dog by the administration of acacia without contributing to the protein intake. Seven animals were prepared in which the protein levels were below 3.5 Gm. per hundred cubic

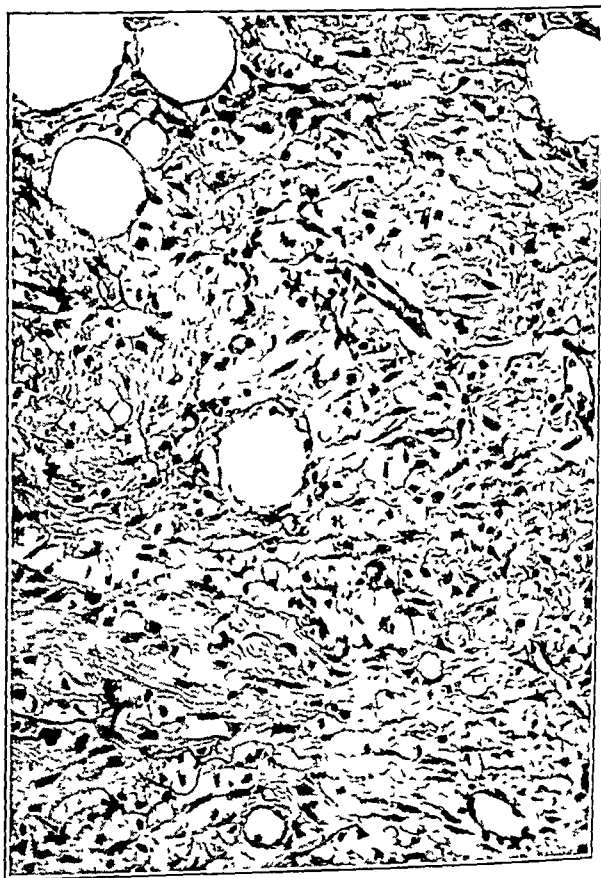


Fig 4—Biopsy specimen of same wound as in figure 1 taken at fourteen days (Reduced from a photomicrograph with a magnification of 300 diameters)

centimeters but in which there was enough acacia circulating in the plasma to prevent any tendency toward edema. The concentration of acacia was maintained between 2 and 3.6 Gm. per hundred cubic centimeters.

⁸ Rhoads, C. P. Personal communication to the authors.
⁹ Rhoads, J. E., and Kasinskas, W. Surgery, to be published.
¹⁰ Whipple, G. H. Protein Production and Exchange in the Body Including Hemoglobin, Plasma Protein and Cell Protein, *Am. J. M. Sc.* 196: 609 (Nov.) 1938.

Three methods were used in the preparation of the dogs. The first 2 were prepared by the repeated administration of acacia solution according to the method of Yuile and Knutti.¹¹ The observations of these authors that this procedure reduces the fibrinogen concentration and also reduces the serum protein concentration were fully confirmed. Their suggestion that the hemorrhagic tendency observed in some of these dogs might be due to a prothrombin deficiency was not completely substantiated. The prothrombin concentration was at times moderately reduced but not to a point low enough to explain the bleeding tendency without reference to some other factor. Whether there was any other factor, except the low fibrinogen level, we do not know.



Fig. 5.—Biopsy specimen of same wound as in figure 3 taken at fourteen days. (Reduced from a photomicrograph with a magnification of 300 diameters.)

The second method, employed on 2 dogs, was a modification of the procedure for total plasmapheresis described by Stanbury, Warweg and Amberson.¹² While the dog was bled from the femoral artery an infusion of erythrocytes suspended in a solution of acacia was given. The procedure was not carried as far as it had been in the experiments conducted by Stanbury and his associates.

The third method, employed on 3 dogs, consisted first in the preparation of hypoproteinemic dogs by the same technic used by Thompson, Ravdin and Frank.⁵ After the hypoproteinemia had been established the test

wounds were made and infusions of acacia begun. This procedure had the advantage of depleting the "labile" stores of protein of the animal as well as of reducing the plasma protein concentration. In all 7 dogs incisions



Fig. 7.—Scanty fibroplasia in plasma-depleted dog fourteen days after original incision. The incision is at the upper right. (Thompson, Ravdin and Frank.⁵)



Fig. 8.—Normal fibroplasia at seven days in a dog whose proteins had been restored by the administration of large amounts of lyophil serum. (Thompson, Ravdin, Rhoads and Frank.¹³)

were made by aseptic technic through the skin, the subcutaneous tissues, the rectus sheath and the rectus muscle on the right and the left sides. The incisions were approximately 2 inches (5 cm.) long.

11. Yuile, C. L., and Knutti, R. E.: Blood Plasma Proteins as Influenced by Intravenous Injection of Gum Acacia: Production of Chronic Hypoproteinemia, *J. Exper. Med.* 70: 605 (Dec.) 1939.

12. Stanbury, J. B.; Warweg, Edna, and Amberson, W. R.: Total Plasmapheresis, *Am. J. Physiol.* 117: 230 (Oct.) 1936.

The rectus sheath was closed on the right side with interrupted sutures of catgut and on the left side with interrupted sutures of silk. On both sides the edges of skin were approximated with interrupted sutures of silk, which were removed on the fifth day. Biopsy specimens were taken at right angles to the wound on the seventh

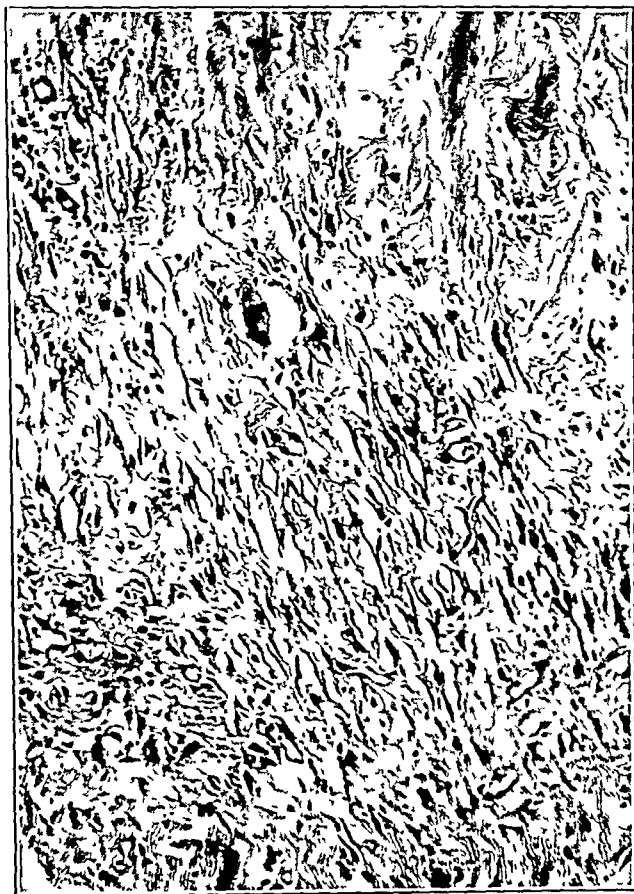


Fig 9—Normal fibroplasia at fourteen days in a dog whose proteins had been restored by the administration of large amounts of lyophil serum (Thompson, Ravdin, Rhoads and Frank¹³)

and fourteenth days. All the wounds showed definite fibroplasia. Photomicrographs of specimens from the wounds of the last 3 dogs are shown (figs. 1 to 5). In comparison, photomicrographs from the paper of Thompson, Ravdin and Frank⁶ disclosing the absence of fibroplasia in hypoproteinemic dogs are shown (figs. 6 and 7), as well as photomicrographs from the paper of Thompson, Ravdin, Rhoads and Frank¹³ disclosing normal fibroplasia obtained in dogs whose hypoproteinemia had been corrected by the administration of large amounts of concentrated serum (figs. 8 and 9).

COMMENT

It is evident from these experiments that the formation of fibroblasts is not a function of the concentration of the serum proteins. In fact, in the last 3 animals which received acacia the protein concentration dropped from 3.67 to 1.91, from 3.55 to 1.99 and from 3.11 to 2.08 Gm. per hundred cubic centimeters, respectively, within seven days after the administration of the first infusion of acacia solution. One of the animals had

had a decubitus ulcer near the ankle for a week prior to the administration of acacia; during this time it had shown no tendency to heal. Within twenty-four hours after the acacia was administered this ulcer was covered with a dry scab, and healing proceeded rapidly during the next seven days. Another animal had an open sore which had persisted for a week. This also had practically healed within a week after the administration of acacia had been started. The following hypotheses have been suggested in explanation of the effect of the acacia:

1. The relation of hypoproteinemia to wound healing is mainly on an osmotic basis. The acacia corrects the low colloid osmotic pressure of the serum, with the result that fibroplasia occurs.

2. The relation of hypoproteinemia to wound healing is mainly on a nutritional basis, but the administration of acacia makes it possible for more protein to be withdrawn from the plasma for tissue-building purposes.

The liver appears to be full of acacia on histologic examination (fig. 10). The acacia may reduce the affinity of the liver for labile protein and thus make available for tissue repair a larger proportion of the small amount of protein in the diet and perhaps a larger

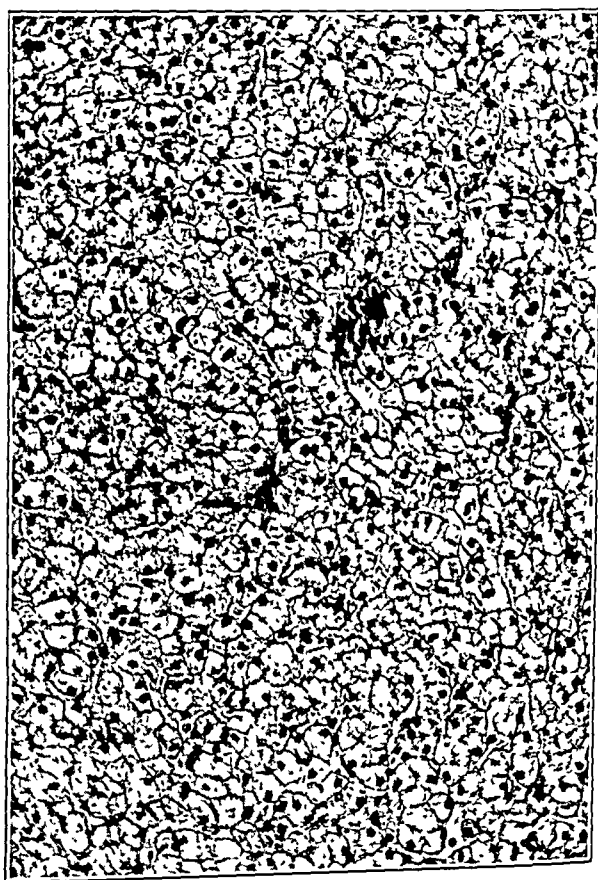


Fig 10—Section of liver of dog 511 after administration of 1,500 cc. of 6 per cent acacia solution in a two week period

proportion of the products of normal protein catabolism. It is not possible at present to decide which of these hypotheses is correct or whether both are important.

CONCLUSIONS

Fibroplasia occurs in the hypoproteinemic animal if ample amounts of acacia are given intravenously to maintain the colloid osmotic pressure of the plasma.

13. Thompson, W. D.; Ravdin, I. S.; Rhoads, J. E., and Frank, I. L. Use of Lyophil Plasma in Correction of Hypoproteinemia and Prevention of Wound Disruption, *Arch Surg.* 36: 509 (March) 1938

This occurs even if chronic hypoproteinemia is produced so as to deplete the stores of labile proteins. It is evident that the failure of fibroplasia in the hypoproteinemic animal is not directly a function of the concentration of the serum proteins. Acacia solution is not recommended in the treatment of hypoproteinemia in patients.

ABSTRACT OF DISCUSSION

DR. CHARLES G. JOHNSTON, Detroit: Dr. Raydin and Dr. Rhoads have pointed out the effect of low serum protein on wound healing and the importance of nutrition in surgical patients. Hartzell and his associates have pointed out the relationships of vitamin C to wound healing in patients and in experimental animals. These contributions have made us aware of the importance of nutrition for surgical patients. It is significant that, in the cases of wound disruption which we have studied, the majority have been in patients who have had gastric or duodenal lesions, chiefly ulcer patients, and a majority of them have been on diets. We have recognized definitely, and Dr. Rhoads has intimated, that serum protein determinations do not necessarily mean that we are measuring the ability of the organism to mobilize the protein or to utilize it. More to the point is the fact that plasma vitamin C determinations give little if any information regarding the vitamin C content of the cellular elements. The paper of Dr. Rhoads and his co-workers has afforded proof that the colloidal osmotic pressure is of importance in wound healing. However, I have noted in patients in whom disruption has occurred that the serum protein was only in rare instances low enough to be considered below an edema level. I wish I could explain why an animal with low serum protein might be restored to normal wound healing after the administration of acacia. The data presented do not intimate that in patients who have difficulties with wound healing one should recommend acacia infusions. I prefer Dr. Rhoads's second explanation of the way in which acacia assists, namely the mobilization of protein for utilization. Wound healing is not a simple phenomenon but depends on many factors. It cannot be explained on any one basis, but all factors must be brought into play. As far as nutrition is concerned, serum protein and vitamin C alone are not the entire answer. We cannot ascribe to any one factor exclusive importance in the healing of wounds.

DR. JONATHAN E. RHOADS, Philadelphia: I want to thank Dr. Johnston for emphasizing that acacia is not a suitable agent to use in patients with hypoproteinemia with the idea of improving their wound healing. To maintain concentrations of acacia of 2 or 3 Gm. per hundred cubic centimeters in the blood of these dogs for two weeks, it was necessary to administer a volume of 6 per cent acacia, equivalent to approximately three times the normal plasma volume. You saw what changes were induced in the liver by this amount of acacia, and as long as it is so easy now to get plasma for transfusion it seems no longer justifiable to use acacia in treating human patients.

The Specialty Boards.—There is another criticism of the special boards as at present constituted, which is that they lay too much emphasis on specialization. In an entirely laudable effort to ensure that every doctor who presumes to call himself a specialist shall be entitled by reason of his training to do so, they have made it well nigh impossible for a man to obtain a solid general foundation. This is what happens. The board demands first a year of general work as an intern or in practice, followed by three years of work at the specialty, whichever it may be. This may be done as two years as a hospital resident and one year in practice as assistant to a senior man, or the whole three years may be spent in hospital, though not many hospitals have facilities for a full three years residency. However, this is what is considered the optimum, and these requirements, which in the early days of the boards—and they are still quite young—had to be elastic to allow of the established men taking them, will shortly become absolute.—Atkinson, Miles: *Behind the Mask of Medicine*, Charles Scribner's Sons, 1941.

SOME MENTAL MECHANISMS IN ALCOHOLISM

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JACKSONVILLE, ILL.

Many approaches and many methods are and have been in use in the study of alcoholism—social, religious and economic as well as scientific. Special societies ranging from the Association for the Study of Alcoholism, with its objective approach, to Alcoholics Anonymous, with its emotional revivalistic urge, are engaged in this problem. Medical investigation likewise has used different technics. Biochemical, physiologic and experimental psychologic research are productive of information. Neuropsychiatry has used various methods from restraint and seclusion to psychoanalysis and attempts at personality education or reeducation in its efforts. This paper deals with a study of alcoholic but otherwise successful persons with whom such attempts were made and some of the mental mechanisms that were found during the course of these attempts.

The source material may be called selected in that it is composed of 105 patients representing 164 of the last 2,000 admissions to a private psychiatric sanatorium. This of itself rules out marginal and indigent economic groups, which differs from Wittman's series.¹ The diagnosis for purposes of classification was "without psychosis, alcoholism." This paper is not as inclusive as the papers of Wall² but conforms more to Karpman's³ remarks in discussion of the former's paper.

Business and professional men made up the greater part of the group and a number of farmers, a few representatives of the arts, a few housewives and career women completed the group. Many were college graduates. The general intelligence level was adult or superior adult. In other words, these persons were considered successful in their sphere whether metropolitan, small town or rural. An early question asked was how they came to be alcoholic. As more contacts were made and more similarity in reaction types was noted, the next problem was how to combat the difficulties that these persons had and how to help them. Out of this experience have come some impressions outlined hereafter.

Most patients entered under the influence of alcohol or with a history of recent overindulgence. An old conception of three stages in management has been followed: During the first stage, while care for the physical features is carried on, some idea of the patient's underlying make-up, freed by alcohol from inhibitions normally present, may be ascertained. During the second stage, when indirect toxic features are still present, when remorse, conscience, apprehension over the effect of disability on business, professional, social or family situation exist, conversations may reveal some conflicts that lead to escape through alcohol. The patient is still shaky emotionally even if not physically. So the trend of conversation runs in that direction with various inferences and sequestrations that may be brought out.

Read before the Section on Nervous and Mental Diseases at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Wittman, M. P.: *Developmental Characteristics and Personalities of Chronic Alcoholics*, *J. Abnorm. & Social Psychol.* 34: 361-377 (July) 1939.

2. Wall, James H.: *A Study of Alcoholism in Men*, *Am. J. Psychiat.* 92: 1389-1402 (May) 1936; *A Study of Alcoholism in Women*, *Am. J. Psychiat.* 92: 943-956 (Jan.) 1937.

3. Karpman, B.: *Discussion of Wall*,² *Am. J. Psychiat.* 92: 953 (Jan.) 1937.

Persons in this group are sensitive and want at this time sympathy and a justification or rationalization for their drinking, even though they may not ordinarily show it. Recognition of this part of their make-up permits them to unburden. It should be stated here

TABLE 1.—*Characteristics Studied in One Hundred and Five Alcoholic Patients Without Psychosis*

Economic adjustment	Homosexualism	Pathologic response
Success in occupation	Heterosexualism	to alcohol
Intellectual level	Filial overdependence	Deterioration
Social attributes	Emancipation	Superficiality
Affective response	Forcefulness	Oral traits
Adaptability	Perseverance	Reaction to mastur-
Activity	Aggressiveness	bation
Extrovert-introvert	Feeling of inferiority	Inflexibility
Gregariousness	Feeling of guilt	Scrupulosity
Solitary drinking	Sensitivity	Consistency
Communicativeness	Mood: Cheerful	Apprehension
Responsibility, general	Depressed	Suspiciousness
Responsibility, alcohol	Irritable	Preoccupation
Self control	Hypochondriasis	Day dreaming
Attitude to habit	Narcissism	Depersonalization
Sexual adjustment	Anorexia	Alcoholism in family
Marital adjustment	Sleep disorder	

that no attempt to secure transference is made in this stage when emotional factors predominate or in the third stage when the person has resumed the habitual type of response. During the third stage, when the person feels well physically, is outwardly at least settled down and is engaging in activities with associates, more objective conversations based on history and information acquired in earlier observations can be carried on.

Forty-eight characteristics combined from several sources⁴ were used, as shown in table 1. The information was assembled from histories, self estimates, notes and personal observations. Analysis of these characteristics naturally depends on the approach of the analyzer. An attempt has been made to use as nearly an objective or laboratory approach as possible. No brief is held for any school of psychiatric thought save a study of the total personality. Such a study covers many classifications not mentioned, but even then headings were difficult to find for some outstanding expressions of individual statements. Predominating characteristics are shown in table 2.

It is obvious that the patients in this series were not able to adjust satisfactorily or they would not have come under observation. Nevertheless, as indicated previously, their economic adjustment was such that they or their families could take care of hospitalization; 90 of the 105 could be definitely classed as successful in their occupations; 88 were counted as having satisfactory social attributes; 68 showed good affective response. Adaptability was fairly high in that 63 had a plus rating, while activity was higher than most characteristics with 97 persons marked positively. A corollary to these figures might be found in an attempt at extrovert-introvert typing, with 79⁺ classed in the former, 22 in the latter and 4 in the unclassified grouping. It is recognized that this is an artificial grouping, as it is difficult to classify many persons as pure extrovert or introvert. Gregariousness ran ahead of the extrovert grouping; 90 persons were noted as having that tendency. It is difficult to assay this in the light of the finding that 95 were counted as solitary drinkers. I have taken the position, however, that the person who drinks at home, in his club, hotel or tavern and communes with one person, whether spouse, waiter or barkeeper, is still a solitary drinker in the psychologic

sense. The communicativeness which 94 people showed raises the question of whether the attempt of the alcoholic to fraternize does not represent a tendency of the introvert to break through natural inhibitions toward social contact or perhaps social contact with a superior group. One must always consider, in evaluating the foregoing reactions, the effect of alcohol in loosening acquired inhibitions, thus revealing latent active personality traits.

General responsibility ran high, as would be expected in this group, with 80 accepting it. Responsibility as to alcohol, self control with respect to it and attitude toward the habit were low, as would also be expected, with 7, 3 and 25 persons respectively showing anything at all of a constructive reaction. This last category is an important one from the point of therapy. It is obvious that it is only through attempting to develop a positive attitude in the patient that anything is going to be accomplished. The ways and means of developing it through various psychiatric technics are less important than the imperative need for it.

Any arrangement of personality studies must include sexual adjustments in their direct and indirect relationships. Sixty-three were considered as having made sexual adjustment, 30 as not having done so and 12 were questionable. Ninety-three were or had been married. Fifty-two had made a satisfactory marital adjustment, 32 had not, 3 had a plus or minus rating and 6 had a questionable one. Relatively few patients showed overt homosexual tendencies. Not many showed the latent tendencies frequently referred to in alcoholism with expressions in parties, groups and the like. Perverse sexual tendencies were not frequently found. The chaotic sexuality referred to by Rosanoff⁵ was evident and, on a percentage basis, even outstanding. Marital maladjustments past and present were frequent. Resort to alcohol in the hope of sexual stimulation for incapacity was rare, though impotence was not infrequent. Most of the marital difficulties arose out of a conflict over the patient's habit. Where they did occur in this group they were mostly social and domestic, which is part of the chaotic sexuality. Conflict on an economic basis over failure to provide occurred only twice.

Filial dependence and/or emancipation therefrom may be considered from the psychoanalytic approach or it may be taken as part of the growing up process.

TABLE 2.—*Characteristics Frequently Found in One Hundred and Five Alcoholic Patients Without Psychosis*

..	96	Sexual adjustment.....	63
..	90	Marital adjustment.....	52
..	85	Filial overdependence.....	43
..	88	Emancipation.....	68
Affective response.....	68	Forcefulness.....	46
Adaptability.....	63	Perseverance.....	63
Activity.....	97	Aggressiveness.....	52
..	79	Feeling of inferiority.....	41
..	95	Anorexia.....	45
..	94	Sleep disorder.....	81
Responsibility, general.....	80	Superficiality.....	90
Gregariousness.....	90	Alcoholism in family.....	52

Records of 43 indicated filial overdependence, while 68 showed emancipation from it. Twenty-nine of the dependent ones failed to develop freedom. Undoubtedly there were others as well in whom the overdependence was latent if not manifest. Escape through alcohol to a false feeling of emancipation was shown frequently in resentment toward parents in expressions

4. Bigelow, N. J. T.; Lehrman, S. R., and Palmer, J. N.: *Personality in Alcoholic Disorders*, Psychiat. Quart. 13: 711-720 (Oct.) 1939. Clark, S. N., Personal communication to the author. Wittman,¹ Wall,² first reference.

5. Rosanoff, A. J.: *Manual of Psychiatry and Mental Hygiene*, ed. 7, New York, John Wiley and Sons, 1938, p. 374.

such as drinking being one way of showing independence. While outwardly conforming at most times, the inability to be normally independent led them to desire it abnormally—hence alcohol.

Forcefulness was not an outstanding characteristic. Less than half received such a rating. Genuinely forceful persons would probably not have become patients. Perseverance, chiefly in regard to occupation and perhaps therefore a compensation reaction, was noted in 68. Many of the same persons who lacked forcefulness and perseverance showed feelings of inferiority, which is compatible. However aggressiveness, which is often used to cover a feeling of inferiority, was more frequently noted in the ratio of 52 to 41 of the 105 persons, so undoubtedly some of that category were missed. Outward manifestations of sensitivity which were the criteria used were likewise not frequent, being checked in 40, though considering other characteristics and inadvertent expressions used in the discussion of other features this number probably is actually higher.

Mood levels considered when not under the influence of alcohol and taken from the statements of the patients and relatives gave 40 habitually cheerful, 27 depressed and 38 irritable. Almost all of the depressed and some of the irritable showed sufficient self anxiety to be classed as hypochondriacal. Some of the outwardly cheerful likewise evidenced hypochondriasis, which would here be classed as undue self interest, a form of narcissism. Manifest signs of the latter were much less frequent.

Psychosomatic features were not considered much in this study, as primary physical phases were purposely omitted. Anorexia was present in 48, a little less than half. Sleep disorder showed a high frequency, 81 evincing it. A pathologic response to alcohol in either physical or psychic sense was naturally present in all. Deterioration was thought to be present in 4 and enough indication was found to be questioned in 29. It would probably be observed more in the finer emotional range in this group.

One trait that has long been recognized as an integral part of alcoholic persons is superficiality. That applies as much for this group of professional and business people, socially adequate, with in general higher than average intellectual capacity, as it does for a group in a different social, economic or intellectual level. Ninety of the 105 were classed so. It is believed that in the present stage of knowledge about overindulgence in alcohol the most important question is "Why?" Why are these people superficial? Why, when they "get a thirst" do family, business, social responsibilities sit lightly? Why do entreaties of relatives, partners, friends do no good? The answer to these questions is well known to physicians. It embraces desire to conform, ambition to be able to drink socially, to be a man among men. All these are adolescent types of reaction indicative of emotional immaturity. They fit in with characteristics presented. So far as capacity, general activity and affect are concerned, most of these patients appear to fall into a cyclothymic category with associated mental mechanisms. Overdependence, feelings of inferiority and superficiality are more consistent with the schizoid tendency, with the last of these traits being predominant. The material offered here agrees with the opinion of many that the reason for alcoholism is to be found in the personality of the individual. As Kraines⁶ says, "The addiction to alcohol is determined

by the internal drive and not by the simple taking of alcohol." While one hesitates to make a didactic statement, the material seems to emphasize a lack of maturity and a difficulty in expression and accomplishment along some lines, chiefly in the emotional field of consciousness.

Parental attitudes have much to do with personality responses in the offspring. It would be far fetched as well as unfair to blame parents for development of alcoholic tendencies in children after the latter have been away perhaps for years. Nevertheless, in alcoholism and in other psychiatric disorders, notably schizophrenia, Williams'⁷ description of "innocent yet dangerous parents" comes to mind with the carry-over into adult life of adolescent reactions affecting both parent and child, the latter even when grown up in other ways.

Therapeutic attempts in this group have been direct and educational. Since the disturbance is emotional, I believe with Miles⁸ that the emotional component in treatment should be interjected as little as possible. The fact that these patients have in the main accepted business and social responsibilities is discussed with them. Various incapacities, maladjustments and conflicts are explained. Attempts at development of personal responsibility are then taken up. There is nothing new in this approach. It is one of the recognized forms of psychotherapy, considered outmoded by some, but in the light of the general intelligence level and general responsibility of this group it appears useful.

It is not possible to make an analysis of results in the same way that has been done for the material, for follow-up reports have not been made in many instances. Records indicate many notable failures, some worth while successes. It is felt that the characteristics and mental mechanisms described here in the study of individual patients have much to do with the personality reactions of the failures. A corollary to this may be that recognition on the part of the intelligent patient and a constructive attitude of personal responsibility developed through direct psychotherapeutic approach has had something to do with the successes.

ABSTRACT OF DISCUSSION

DR. LLOYD H. ZIEGLER, Wauwatosa, Wis.: As physicians, we are likely to focus our attention on a few medical aspects of a person which are the basis for calling him a patient. Dr. Norbury has made a broader survey of the qualities of human nature in a group of reasonably successful and capable so-called nonpsychotic alcoholic patients. It would have been valuable to have available an equal number of nonalcoholic persons from similar strata of life for comparison. Had he studied a control group, some of the qualities of the alcoholic addicts that now seem significant would doubtless overlap with the controls to rob them of their seeming relationship to alcoholism. His patients were responsible about most things except themselves and their relationship to alcohol. One can see this in the diabetic patient who refuses to follow a diet restriction, in persons who hear the morning alarm clock but who refuse to heed it and so get to appointments late, in persons who violate the fishing or hunting laws or in automobile drivers who blame everything except themselves for accidents. This attribute is not limited to alcoholic addicts by any means. The fact remains that alcohol never of itself runs into any one's mouth. A definite person assumes responsibility for seeking it out; he uses his own right hand in lifting it to his mouth; he swallows it. These acts he performs and for them he must assume responsibility. What happens after this is often mixed up with excuses but not with responsibility. There is a dif-

7. Williams, F. E.: *Adolescence, Studies in Mental Hygiene*, New York, Farrar & Rinehart, 1930, p. 32.

8. Miles, W. R.: *Psychological Factors in Alcoholism*, *Ment. Hyg.* 21: 529-548 (Oct.) 1937.

6. Kraines, S. H.: *The Therapy of the Neuroses and Psychoses*, Philadelphia, Lea & Febiger, 1941, p. 402.

ference. The alcoholic addict can ever point to the milieu of society which makes light of the affair. Judges of the court too who should be expert in placing responsibility have been known to use drinking as an excuse for leniency toward the results of the misuse of alcohol. Alcoholism is merely a name applied to the behavior of a definite person who thinks he can drink or let it alone but always drinks. This is a serious breach of responsibility to himself and often to his family. He becomes ex-alcoholic when he controls his irresponsibilities. Dr. Norbury's observation of superficiality interested me. Alcoholic addicts are often active, on the go, and may be bored by serious and sustained effort. They have seemed not quite grown up, living the part of youthful actors in a play world in which they get on splendidly together. There is great demand for the person who is witty and friendly, has warmth of personality, but who is not a deep thinker. Dr. Norbury's interest in these patients has been so broad that he has the armamentarium for succeeding where others might fail.

DR. G. WILSE ROBINSON JR., Kansas City, Mo.: Before the American Psychiatric Association in Richmond last month, Dr. Seligman presented a similar analysis. In Dr. Norbury's series such things as economic adjustment, success in occupation, intellectual level plus and social attributes plus are found in the majority of his patients. These are what we call normal characteristics. I have made this observation in my own cases time after time. I believe the problem as to why most economically successful alcoholic addicts drink is a rather simple one to state but a hard one to solve. He drinks for the same reason that the president of the bank, the circuit judge and the roustabout drinks: in order to have fun with other people or to relax. I believe that all alcoholic addicts start out as social drinkers, and it is only after alcoholism has become a problem that they attempt to hide it. Temptation to drink is almost universal. In certain social groups alcohol is served at every social function, and I have had many alcoholic patients tell me they get along fine until they attend some social event where liquor is served. I have had fellows tell me they have gone through the event and then the next day started to drink. From time to time it really becomes overwhelming, or their nervous fatigue becomes so intense that they need a sedative to produce relaxation. After they have started a drinking experience they cannot stop, and then they may drink in a solitary manner, hoping to hide it. I feel that the major problem with regard to the alcoholic addict is that he is no longer able to control alcohol. For many years he has been drinking socially. Suddenly he finds he cannot. The known diabetic patient is not tempted with sugar. Everybody understands why he cannot use sugar. However, the known alcoholic addict is not only served liquor but he is usually urged to drink for old times' sake. The strain on resistance is too much on many occasions. The problem of alcoholism will not be solved until we have found some way to make it possible for the alcoholic addict to drink again as he used to drink. I believe the problem is more physiologic than psychologic. My series includes a cross section of the social and economic life of Kansas City. It includes successes and failures, professional men and laborers, rich and poor, social registrants and bums. The only universal motif that I have been able to find is an inability to drink like other men. Certain thinkers may consider that psychologic. I consider it a physiologic problem, and I believe that the pathologic, physiologic and pharmacologic problem must be solved as well as the possible psychologic problems before we can find a solution to the problem of alcoholism.

DR. R. V. SELIGER, Baltimore: I congratulate Dr. Norbury on his fine paper on the personality characteristics of the alcoholic addict. I found that 50 per cent of the alcoholic addicts were extroverts and 50 per cent were introverts. As far as family inheritance is concerned, I think that one out of three of our group had a family background of alcoholism. I feel that the social drinker can handle alcohol so that it does not interfere with his important life activities, while a chronic alcoholic addict is handled by alcohol so that it does interfere with his important life activities. I do not feel that a chronic alcoholic addict can ever again drink. The only way for help and guidance and cure is total abstinence for life. Once a pathologic drinker, a person can never be a social drinker. There are about seven important factors in the successful rehabilitation of the alcoholic

addict. Among these are the personality of the psychiatrist and the careful selection of patients. The patient has to have average intelligence or better. He has to have some emotional maturity in his make-up. His nervous system has to be undamaged at the time of treatment, and he must want treatment. You cannot treat a patient against his will. There has to be some psychiatric approach to find out what the mechanism is behind his drinking, if any, whether you go through the psychoanalytic approach or take the psychobiologic approach or any other approach. Then there must be a long period of rehabilitation, training and regulation of the patient's emotional life. Along with these there is a certain suggestive factor in which the patient knows that the doctor is interested inherently in alcoholic addicts, that he has helped others, and the patient sees by contact with former patients that alcoholic addicts can be helped. The follow-up for the rest of his life is important, either by correspondence or by visits. Finally it is my feeling that whether one considers that alcoholism is evidence of an escape mechanism or a neurosis or a psychosis or is evidence of latent or overt homosexuality or of a tendency to self destruction, one must realize that the situation is an individual psychobiologic personality reaction to life and life situations plus habit formation both in the emotional field and to the drug.

DR. F. GARM NORBURY, Jacksonville, Ill.: There are many ramifications of this subject. It was my purpose just to bring out certain features that had interested me in a personality study. I am inclined to agree with Dr. Seliger that the alcoholic addict cannot drink again. There are both psychologic and I think biochemical factors in that. If one can think of sensitization, the person who has used alcohol in the past is not only psychologically but I believe in a certain sense biochemically sensitized, at least in that it produces a catalytic type of explosive reaction; but that is rather outside the discussion of this particular paper.

STUDIES IN NICOTINIC ACID METABOLISM

V. A TEST FOR NICOTINIC ACID DEFICIENCY IN MAN

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It has not been possible to demonstrate nicotinic acid deficiency in man by the determination of either the blood level of nicotinic acid¹ or the level of urinary excretion.² The test described here is based on the level of excretion of nicotinic acid and trigonelline after a dose of nicotinamide.

In dogs maintained on a diet low in nicotinic acid it has been shown that a dose of nicotinic acid is largely retained.³ After the dogs were well saturated by a high intake of nicotinic acid, most of the test dose of nicotinic acid was found in the urine as acid hydrolyzable nicotinic acid derivatives and trigonelline. This principle was applied to man in the following way:

Twenty-four normal adults were instructed to omit for three days coffee, all leguminous vegetables and

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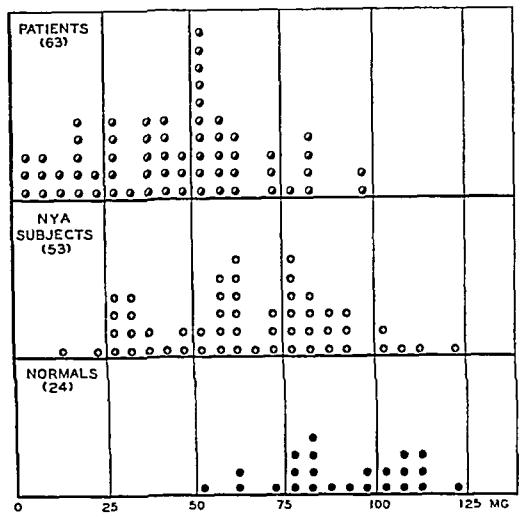
A preliminary report was presented on July 24, 1941 before the Special Research Conference on Vitamins of the A. A. S. at Gibson Island, Maryland.

1. Field, Henry, Jr.; Melnick, Daniel; Robinson, W. D., and Wilkinson, C. F., Jr.: Studies on the Chemical Diagnosis of Pellagra. J. Clin. Investigation 20: 379 (July) 1941.

2. Sarett, H. P.; Huff, J. W., and Perlzweig, W. A.: The Fate of Nicotinic Acid in Man, J. Nutrition, to be published.

3. Sarett, H. P.: The Fate of Nicotinic Acid in Normal and Black-tongue Dogs, J. Nutrition, to be published.

nuts (all of which contain trigonelline) from their otherwise adequate diets. On the evening of the second day the subjects voided just before dinner and discarded the urine. All urine, including that voided on rising, was collected until the next morning and preserved with



Distribution of extra excretion of total nicotinic acid after 500 mg. of nicotinamide (mg. in twelve hours).

toluene. Each subject ingested with the dinner 500 mg. of nicotinamide and again collected all urines until the next morning. The nicotinamide was administered intravenously to some of the patients as described later. No untoward or disagreeable reactions developed in any of the subjects after the oral or intravenous administration of 500 mg. of nicotinamide.⁴ The control and test urines were analyzed for the acid hydrolyzable nicotinic acid derivatives and for trigonelline by the method previously published.⁵

In addition to the 24 normal subjects the test was applied also to two other groups, the first consisting of 53 young men (aged 16 to 24) as they were admitted to a local National Youth Administration camp for the purpose of physical upbuilding by means of diet and exercise. This group consisted of underweight and undernourished boys, physically under par, with or without correctable defects but capable of physical work. There were no cases of organic or infectious disorders.⁶ The boys all came from the lower economic levels of the local population, as did the subjects of the next group of hospital patients.

Sixty-three patients, unselected as to nutritional status, type or duration of disease or age, were also subjected to this test. Of this group 50 represented every patient, without exception, who was admitted to a male public medical ward of Duke Hospital over a five week period. The other 13 (6 men and 7 women) were recently admitted medical patients taken at random. The tests were started on all of these patients within two days of their admission to the hospital while they were on the regular ward diet. They were all acutely or chronically ill with the large variety of diseases found in a public medical ward. Apart from 1 case of partly treated pellagra and 4 cases of frankly

characterized nutritional deficiency, the incidence of symptoms of general malnutrition such as loss of weight, anorexia and secondary anemia was relatively high in this group, being partly due to its low economic level and partly inherent in the clinical conditions which they presented.

A comparison of the findings in these two groups with the group of normal subjects is shown in the accompanying table and chart.

It will be observed that no significant differences in the nicotinic acid excretion were found in the control urines of the three groups. However, marked differences in levels of excretion of these groups appeared in the urines following the ingestion of 500 mg. of nicotinamide. These differences were found almost entirely in the trigonelline fraction of the urine. This explains the results of Briggs,⁷ who determined only acid hydrolyzable nicotinic acid derivatives and not trigonelline and was therefore unable to find differences between normal and deficient subjects. The extra total nicotinic acid (including trigonelline) excreted after the test dose averaged 90 mg. for normal persons, 63 mg. for NYA subjects and 41 mg. for hospital patients.

The distribution of individual value for the extra total nicotinic acid after the test dose is shown in the chart. All of the normal subjects gave values above 50 mg. and 84 per cent were above 75 mg., while among the patients only 11 per cent were above 75 mg. and 54 per cent were below 50 mg. The NYA group occupied an intermediate position between these two extremes.

The question of the completeness of absorption of the nicotinamide arose, and it was found that in 4 normal subjects the results obtained after intravenous and oral administration of the test doses, given several days apart, agreed very well. In 12 of the patients in whom there were symptoms of gastrointestinal or liver disease the amide was administered intravenously and the test was repeated orally one to four days later. With the exception of 1 subject in whom the oral test was con-

Twelve Hour Urinary Excretion of Nicotinic Acid and Trigonelline in Three Groups of Subjects Before and After 500 Mg. Dose of Nicotinamide

	Nicotinic Acid *		Trigonelline		Total †	
	Range, Mg.	Average, Mg.	Range, Mg.	Average, Mg.	Average, Mg.	Extra Excretion After Test, Mg.
Normal persons (24)						
Before.....	0.5-1.5	0.9	5-21	10	9.9	
After.....	3-39	7.3	76-136	104	100	90
NYA subjects (53)						
Before.....	0.4-1.8	0.8	3.8-17.6	8.3	8.3	
After.....	0.5-4.4	1.9	19-141	77	71	63
Hospital patients (63)						
Before.....	0.1-2.3	0.7	1.2-28	7.7	7.7	
After.....	0.3-23	2.7	2.0-109	51	49	41

* Includes all nicotinic acid derivatives hydrolyzable by boiling with 6 normal hydrochloric acid.
† Total represents the sum of nicotinic acid and trigonelline calculated in terms of nicotinic acid.

siderably lower than the intravenous, the results were similar to those obtained with successive oral doses. However, in diseases which may affect absorption from the gastrointestinal tract, including severe deficiencies, it is advisable to give the test dose intravenously. The results of the intravenous test only were included for these 12 patients in the table and chart.

7. Briggs, A. P.: Excretion of Nicotinic Acid in Pellagra, *Proc. Soc. Exper. Biol. & Med.* 46: 374 (March) 1941.

4. The nicotinamide used in this study was the gift of the Upjohn Company.
5. Perlzweig, W. A.; Levy, E. D., and Sarett, H. P.: Nicotinic Acid Derivatives in Human Urine and Their Determination, *J. Biol. Chem.* 136: 729 (Dec.) 1940. Sarett, Huff and Perlzweig.
6. Dr. I. H. Manning Jr., medical director, and the staff of the NYA camp cooperated in this work.

SUMMARY

The majority of hospital patients admitted to a general medical ward excreted in twelve to fourteen hours much less of a large dose of nicotinamide than normal persons. A group of undernourished youths excreted an intermediate amount after the same dose. The procedure described may serve as a test for nicotinic acid deficiency in man.

UNCOMPLICATED FRACTURES OF RIBS AND MAJOR INJURIES OF THE CHEST WALL

TREATMENT BY INFILTRATION WITH
LOCAL ANESTHETIC

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The usual attitude of the physician about fractures of the ribs is well summarized by the following quotation, taken from a current textbook on the treatment of fractures:¹ "Fractures of the ribs in themselves are not of much moment, and it is only their complications that make them important." The frequency of fractures of the ribs, together with the relative effectiveness of treatment afforded by wide hemicircumferential strapping of the chest, has resulted in widespread acceptance of this method of treatment. Whatever discomfort arises has been passed over as being "part of the treatment." However, therapeutic procedures should be made as agreeable to the patient as possible and the course of convalescence, even from minor injuries, free from pain and complications. In a recent authoritative symposium on fractures² the only method of treating fractures of the ribs given was strapping of the chest with adhesive tape.

Our experiences with the treatment of sprains, marginal fractures and painful myofascial disorders with procaine hydrochloride have led us to apply this method to other painful conditions. Investigators³ who have had the opportunity to witness the shorter and milder course of patients suffering from the acute traumatic conditions mentioned have advocated this method as the treatment of choice. At first we used it hesitantly on patients who suffered only pain from local and isolated fractures of ribs, but later we extended it, with the same immediate relief from pain and general alleviation of the course of convalescence, to patients with the major varieties of injuries to the chest that are described in detail later in this paper. While the results of treatment with procaine hydrochloride alone were satisfactory, the adoption of a double solution containing 0.5 per cent procaine hydrochloride and 0.1 per cent

eutupine dihydrochloride (isoamylhydrocupreine dihydrochloride), to which epinephrine hydrochloride (10 drops per hundred cubic centimeters) was added, gave more prolonged primary anesthesia (three or four hours, as compared to one-half to one hour). This double solution is now used routinely in treating thoracic injuries at the Guthrie Clinic and Robert Packer Hospital.

The advantages of the injection treatment for fractures of ribs as compared with the immobilization treatment are that (1) pain is immediately abolished, because of the removal of pleural and local afferent sensations; (2) the vital capacity and the tidal air remain at a more normal level; (3) excessive coughing due to pleural irritation is diminished; (4) as a result, the use of general sedatives and cough mixtures is lessened or made entirely unnecessary, and (5) the injection is a minor procedure that can be carried out in the office. The only drawbacks are (1) the danger of infection, which is minimal with adequate aseptic technic (infection did not occur in any of our cases) and (2) the psychic disadvantage with persons who "do not like injection treatments." The only absolute contraindications are (1) known hypersensitivity to procaine or epinephrine hydrochloride and/or sensitivity to the quinine series of drugs (minor untoward reactions can be abolished by giving sodium amytal in doses of 1½ to 3 grains [0.09 to 0.18 Gm.] one hour before injection) and (2) a dirty or infected open wound in the skin that cannot be blocked off from the field of injection.

On reviewing the literature, we found that Zoppi⁴ has been the only author to recommend local infiltration of procaine hydrochloride for fractures of the ribs. In his article the daily infiltration of the analgesic was recommended. A number of articles have given supporting evidence to the effectiveness of regional nerve block in both simple and complicated injuries to the chest. Alcoholization of the intercostal nerves has been advocated by Latteri,⁵ Rabboni⁶ and Grieco,⁷ the method having been originated for the control of pain from tuberculous pleuritis. In this country only Rovenstine and Byrd⁸ have utilized intercostal regional anesthesia for analgesia in cases of extensive thoracic injuries. These authors expressed the belief that the method lessens the mortality, contributes greatly to the patient's comfort and is important as a prophylactic agent against respiratory infection.

MANAGEMENT

After the diagnosis is made and the site of the fracture accurately localized by roentgenograms, the patient is placed on a table with the site of fracture in a prominent and accessible position. A mark is placed on the skin with a solution of gentian violet, a silver nitrate stick or some other coloring agent that can be readily distinguished from the cutaneous disinfectant. The surrounding area is prepared with half strength tincture of iodine and draped with sterile towels. For convenience, in our clinic a standardized tray setup, containing syringes, needles and the solution to be injected, is prepared on the operating floor and transported to the

From the Department of Orthopaedic and Traumatic Surgery, the Guthrie Clinic and the Robert Packer Hospital.

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6. Rabboni, F.: Treatment of Fractured Ribs by Alcohol Injection of Intercostal Nerves, *Chir. d. org. di movimento* 22: 263, 1936.

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outpatient clinic or to the bedside. The solutions of procaine hydrochloride and eucupine dihydrochloride are sterilized separately in 1 per cent strength and mixed by diluting with physiologic solution of sodium chloride to obtain a final concentration of 0.5 per cent of the former and 0.1 per cent of the latter. Epinephrine hydrochloride solution (1:1,000) is then dropped into this mixture. A wheal is raised over the proposed site of injection, 1 cc. of solution is placed deeply in the subcutaneous tissues and 2 or 3 cc. of solution is infiltrated directly into the site of fracture. If this site and its surrounding hematoma cannot be directly entered or identified with the tip of the needle, 4 to 6 cc. of solution is placed in the surrounding tissues. With fractures above and including the third rib and with posterior fractures, especially those covered by the scapula and its mesial muscular attachments, it is difficult to make an injection directly into the site of fracture. Elsewhere localized tenderness and crepitus will serve as a guide to accurate deep placement of the needle. Single fractures in many ribs, multiple fractures in the same rib,

In addition to mentioning the cases of minor fractures of ribs we wish to illustrate the use of infiltration with local anesthetic for major injuries to the chest wall by the following case reports.

REPORT OF CASES

CASE 1.—*Open operative excision of protruding ends of ribs that had punctured the pleura; subsequent use of procaine hydrochloride-eucupine dihydrochloride solution to relieve pain in the chest from multiple fractures of ribs.*

C. F., a man aged 39, received a severe injury to the chest by being stepped on by a horse. When examined shortly after the injury had taken place he had pain along the whole right side of the chest. He was dyspneic and was in mild shock. Examination revealed dullness of the chest up to the seventh rib and exquisite tenderness in the right posterior scapular line. Roentgenographic examination revealed fractures of the right second to eleventh ribs inclusive, which were on the average 9 cm. from the costovertebral junction (figs. 1, 2 and 3).

On admission, the blood pressure was 116 systolic and 70 diastolic. The blood contained 3,400,000 red cells and 16,000 white cells per cubic millimeter. Since roentgenograms of



Fig. 1.—The chest in case 1 on the day of injury. Open operation was performed to excise sharp ends of ribs that had lacerated the costal wall, including the pleura. The arrows indicate the free fragments at the sites of fracture of the fourth and fifth ribs.

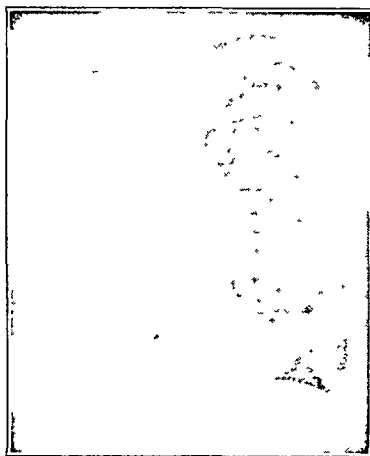


Fig. 2.—The chest in case 1 seventeen days after operation. Note the fluid level and the shift of the costal wall after excision of fragments of the fifth and sixth ribs.

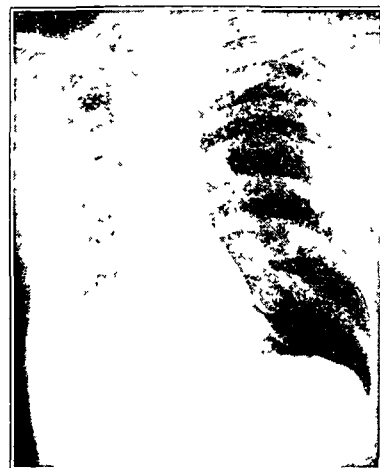


Fig. 3.—The chest in case 1 two months after injury. The right side had practically cleared.

extensive injuries to the thoracic wall, mild to moderate shock and the presence of emphysema instead of being contraindications are, indeed, indications for use of the method. A small gauze dressing or a small cotton or gauze pledget soaked with collodion serves as a temporary dressing. Often one injection suffices, but in 8 (25 per cent) of the 32 cases of minor fractures covered in this report it was necessary to perform another injection at the site of fracture in one to four days. In no instance was a third injection necessary. Relief from pain is difficult to estimate and is impossible to measure exactly, but the normal response from the patient was that he was "comfortable," being immediately relieved from pain and only "slightly uncomfortable" for two to five additional days, with only an occasional pain on sudden positional change for two more weeks. The average period of disability (until the patient returned to his former occupation, usually light manual labor) was four and two-tenths days for the 32 patients. Twelve with fracture of a single rib returned to work immediately after treatment and were not "disabled." The 32 patients were given entirely ambulatory treatment.

the chest showed central displacement of the right fifth rib into the chest wall and through the pleura, it was deemed necessary to examine this rib at open operation.

Accordingly this was done, with infiltration anesthesia with procaine hydrochloride. The costal wall from the third to the seventh ribs was bared through a posterior horizontal incision which allowed the scapula to be pulled laterally. The mesial end of the right fifth rib was found to have perforated the pleura. One-half inch was resected from both the mesial and the lateral ends of the fractured fifth and sixth ribs, the pleural wound closed en bloc with the adjacent intercostal muscles, the rhomboid muscles reapproximated and the wound closed. Physiologic solution of sodium chloride was administered intravenously throughout the operation, which was well tolerated by the patient. The blood pressure at the termination of the operation was 100 systolic and 74 diastolic. Into each of the remaining fractures, not visualized at operation, 3 cc. of a 1 per cent solution of procaine hydrochloride was injected. The patient returned to the ward less dyspneic and breathing without pain in the chest. The vital capacity (normal, 4.4 liters) prior to operation was only 1,200 cc. Immediately after operation it rose to 1,600 cc.

On the morning of the following day the patient was fairly comfortable, but pain in the chest increased and the respiratory rate increased from 28 to 40. He was placed in an oxygen

tent sixteen hours after operation. Throughout this day the blood pressure was well maintained and the red blood cell count remained at 3,900,000 per cubic millimeter. In spite of the use of the oxygen tent, the patient became more dyspneic on the third postoperative day, and the slight cough which he had had on the second day increased in annoyance and severity. The cough was not productive, and the patient suffered extreme

Preoperative and Postoperative Estimation of Vital Capacity After Injection Treatment for Fractures of Ribs and Injuries to the Chest

Case	Normal, Liters	Pilot to Injection, Liters	Immediately After Injection, Liters	Final Determinations	
				Interval	Amount, Liters
1	4.4	1.2	1.6	8 mo.	3.9
4	4.5	0.4	1.5	2 mo.	3.3
5	4.4	1.3	2.0	4 mo.	3.6

pain with each attempt at coughing. He was gravely ill, and the temperature, which had previously been normal, rose to 101 F. Multiple injections of 3 to 4 cc. of a solution of 0.5 per cent procaine hydrochloride and 0.1 per cent eucupine dihydrochloride were made as nearly as possible into the site of each fracture (forty hours after the operation). The patient was relieved from pain immediately, and within fifteen minutes his cough became productive of plain and faintly blood-streaked sputum. The respiratory rate declined from 40 to 32.

From this point, the entire clinical picture shifted. The temperature declined to an average of 99 F. It was not again necessary to inject the solution into the fractured ribs, although moderate pain returned as the patient was able to expectorate collections of mucus from the upper respiratory tract. During the ensuing twenty-three days' stay in the hospital, the vital capacity slowly rose to 2 liters. Further increase was hampered by the collection of fluid in the right side of the lower part of the chest up to the sixth rib. Since the patient was not dyspneic except on moderate exertion, there was no indication for aspiration of the fluid. He continued to improve after leaving the hospital, but the vital capacity did not return fully to normal for two months, and the fluid did not all disappear from the right side of the chest until that time.

When last seen, eight months after the injury, he was working daily at moderately heavy manual labor without pain or dyspnea. Roentgenograms showed the chest clear, and the vital capacity was 3.9 liters (table).

CASE 2.—Complete and permanent relief from pain in simple multiple fractures of ribs.

H. A. B., a woman aged 55, sustained contusions to the left shoulder and thoracic region from direct trauma in an automobile accident. When she was first seen rib strapping had been applied as an emergency measure elsewhere but had only partially relieved pain. Roentgenographic examination showed fractures of the eighth,

ninth, tenth and eleventh ribs in the left anterior axillary line. When admitted, the patient was suffering severe pain in the left side of the chest and was unable to take a deep breath because of it. Severe pain was also present on movement of the left shoulder, but roentgenographic examination revealed no bony injuries there. Anesthesia of the painful areas in the

ribs was obtained by depositing 3 cc. of solution directly into each site of fracture. Relief was obtained immediately and persisted during the patient's remaining four days in the hospital. On discharge, the patient stated that the only pain she had had while in the hospital had been associated with movements of the shoulder or had been produced by sudden rising or twisting. Ordinary breathing efforts and motion had been entirely without pain.

CASE 3.—Fractures of ribs complicated by subcutaneous emphysema.

M. S., a frail woman aged 82, was involved in an automobile accident, suffering injuries to the left shoulder and the right side of the chest. She was admitted to the hospital on the morning after the accident. A local physician had strapped her chest, but this had not relieved the pain. She had not eaten the previous day because any movement of the neck, including deglutition, caused severe pain in the chest. She was likewise unable to turn herself in bed for this reason.

Roentgen examination revealed fracture of the second and third ribs near the left sternocostal margin and fracture of the right pubic ramus (fig. 4). There was considerable subcutaneous emphysema over the left side of the chest, which spread out over the left side of the neck and the left axilla. The patient was given a single injection of 10 cc. of a solution of procaine hydrochloride and eucupine dihydrochloride, this quantity being equally divided between the sites of fracture on the second and third ribs. From this time, the patient was able to sit in a semireclining position in comfort and to turn slightly in bed in accordance with preventive measures taken to prevent passive congestion, and she could take fluids and food orally without discomfort. The relief was instantaneous after injection and continued until the following day, when only slight discomfort in the chest returned. During the remainder of her hospital stay she was comfortable. The air beneath the skin was gradually absorbed, so that none was present ten days after injury.

CASE 4.—Fracture of four ribs in the left midaxillary line, with incomplete fracture of two of the ventral ends of the same ribs; hemopneumothorax and subcutaneous emphysema.

G. M., a man aged 58, was struck by an automobile while walking on a highway and was brought immediately to the hospital. He had pain in the chest and expectorated a fair amount of bloody sputum. There was extensive subcutaneous emphysema over the left thoracic wall, the left side of the chest was hyperresonant and there were no breath sounds. Roentgenograms showed fractures of the fifth, sixth, seventh and eighth ribs in the left midaxillary line (fig. 5), incomplete fracture of the vertebral ends of the sixth and seventh ribs and an undisplaced fracture through the left pubis. A complete pneumothorax was visualized on the left. The vital capacity was but 0.4 liter (normal, 4.5 liters), but the test was unsatisfactory because of the extreme pain. He received an injection of 10 cc. of procaine hydrochloride-eucupine dihydrochloride solution into the site of fracture in the left midaxillary line and an additional 5 cc. into two contused areas in the right side of the chest, with immediate and permanent relief from pain. The patient volunteered that during the next week he was uncomfortable only on quick turning in bed. He was kept



Fig. 5.—The chest in case 4. The arrows indicate the fractures of ribs in the left midaxillary line.



Fig. 4.—The chest in case 3. The arrows indicate the sites of fractures of ribs. Note the mottling over the left side of the upper part of the chest produced by subcutaneous emphysema.

in bed for ten days because of the complete pneumothorax. Periodic roentgen examination of the chest demonstrated fluid up to the tenth rib posteriorly and partial expansion of the left lung in ten days. When the patient was last seen, ten weeks after injury, the vital capacity, which for the first ten days after injury had remained between 1.4 and 2.3 liters, had risen to 3.3 liters. All symptoms had subsided.

CASE 5.—*Sternomanubrial dislocation.*

M. C., an obese man aged 46, injured the chest by direct impact of the body of the sternum against the steering wheel of an automobile. This resulted in tearing of the sternal manubrial ligaments, with anterior dislocation of the manubrium on the body of the sternum. Fracture of the right fourth, fifth, sixth and seventh ribs in the anterior axillary line also occurred (figs. 6 and 7). He was admitted to the hospital on the morning following the accident.

Physical examination at that time failed to reveal evidence of any trauma except that of the thoracic area. The patient was suffering considerable pain, and respirations were shallow and difficult because of it. He was immediately given an injection of 15 cc. of a solution of procaine hydrochloride and eucupine dihydrochloride into the site of dislocation. Five cc. of the solution was deposited with a long needle about the site of each fracture. The respiratory rate slowed from 40 to 28, the breathing became correspondingly deeper and the patient was immediately relieved from pain. The relief continued from noon until 10 p. m., at which time the patient complained of a return of discomfort, mainly at the site of dislocation in the anterior midline of the chest. He was given another injection of 20 cc. of a solution of procaine hydrochloride and eucupine dihydrochloride and passed a fairly comfortable night. From this point, thirty-six hours after the accident, the patient was fairly comfortable and required no injections.

During the remainder of his hospital stay, ten days, he suffered slight discomfort at the site of dislocation but in the main was free from the exquisite pain from which he had suffered on entrance. He was advised to spend several weeks in recumbency and extension because of the tendency for the superior fragment to be displaced. This advice was unheeded, and he insisted on leaving the hospital. Pain had not been a prominent feature of his course from the second day in the

hospital. He began to experience increasing pain in the back at the fourth and fifth thoracic segments and returned to the hospital for open reduction and fixation of the dislocation two months after the original injury.

COMMENT

The cases reported in this paper demonstrate the immediate and effective relief from pain obtained after minor fractures of the ribs (in 32 cases) and after major injuries to the chest (in 5 instances) through infiltration of a solution giving prolonged local anes-

thetia before the reduction of fractures of the long bones. This method eliminates rib strapping and sedatives, both of which exert unfavorable effects on thoracic injuries. Strapping the chest reduces the effective excursion of the chest wall and thus reduces tidal air and vital capacity and lessens the effectiveness of the cough reflex. Sedatives, especially drugs of the opiate series, depress respirations, decreasing pulmonary ventilation, and diminish the sensitivity of the cough reflex. Smaller doses of these drugs, which will not have the untoward effect mentioned, usually are not effective in controlling pain.

A more logical means of controlling pain is to interrupt the painful afferent stimuli at their origin at the site of fracture. To do this is compatible with the known effectiveness of local anesthetic agents in the treatment of sprains and other areas subjected to trauma. While fractures of the ribs and major injuries of the chest wall can be treated either by local infiltration of the anesthetic agent or by the production of regional anesthesia by paravertebral block, the latter is technically more difficult, and the end results are the same.

The comfort of all the patients on whom the method was used improved after the injection. Indeed, the method was considered life saving in 1 instance (case 1), since the entire clinical picture shifted after the use of the solution.

All authorities are agreed that injuries to the thoracic wall, including penetrating wounds, are best managed conservatively. Boland⁹ and Elkin¹⁰ reported a mortality of only 8.5 per cent from all types of pulmonary and pleural injuries in 1,009 cases in which such injuries presented most, if not all, of the clinical picture. The indications for operation for such injuries are usually extensive laceration of the pleural wall, with or without hemorrhage, and hemorrhage from the tearing of an intercostal artery. The occurrence of tension pneumothorax calls for careful aspiration of blood and air from the pleural space. Aspiration as a rule should be delayed twenty-four or forty-eight hours if possible, since a pleural tamponade will succeed in controlling hemorrhage in a certain number of cases. A review of methods and indications for treatment may be found in the article by Berry¹¹ and in the textbook of Graham, Singer and Ballou.¹²

9. Boland, F. K.: Traumatic Surgery of the Lungs and Pleura: Analysis of 1,009 Cases of Penetrating Wounds, *Ann. Surg.* **104**: 572, 1936.

10. Elkin, D. C.: Wounds of the Thoracic Viscera, *J. A. M. A.* **107**: 181 (July 18) 1936.

11. Berry, F. B.: Wounds of the Thoracic Viscera, *Am. J. Surg.* **30**: 12, 1938.

12. Graham, E. A.; Singer, J. J., and Ballou, H. C.: *Surgical Diseases of the Chest*, Philadelphia, Lea & Febiger, 1935.



Fig. 7.—The end result in case 5, three months later. Note that reduction has been maintained.

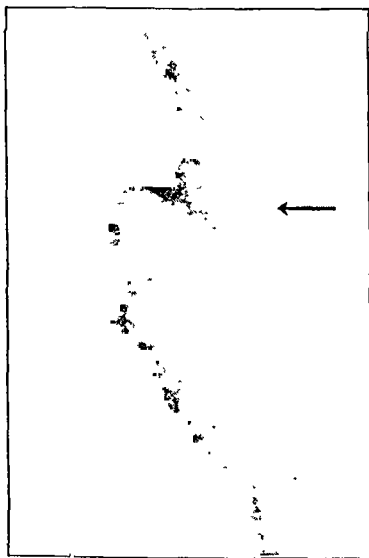


Fig. 6.—Lateral roentgenogram of the chest in case 5. The arrow points to the sternomanubrial dislocation. This view was taken forty-eight hours after injury. The lower fragment is depressed.

thetia. When the precautions usually taken before the injection of a local anesthetic are observed, there is as much reason for the injection of this solution directly into the site of fracture in ribs as there is for the use of a

SUMMARY AND CONCLUSIONS

The use of a local anesthetic with a prolonged action in 32 cases of minor fractures of ribs and 5 major thoracic injuries eliminated the necessity of strapping the chest wall with adhesive tape and the excessive use of sedatives to control pain. A more physiologic state was thus preserved throughout convalescence. It is our clinical impression that the comfort of the patient is greater with this type of treatment than with any other.

LEPTOSPIRAL INFECTION (WEIL'S DISEASE) AS AN OCCUPATIONAL HAZARD

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Human leptospiral infections have been frequently associated with circumstances or occupations in which the patient has had contact with the excreta of rats or, rarely, with those of dogs. Isolated cases have been adjudged industrial accidents, and compensation has been awarded in this country and abroad. Recent investigations have shown an unsuspected incidence of the infection in certain occupations. This finding has increased the concern about the industrial liability that may be involved.

Leptospiral infections have been confused clinically with catarrhal jaundice and other diseases that have no occupational association. It becomes essential, therefore, to establish the diagnosis by laboratory methods. In this country at the present time a leptospiral infection is but rarely considered in the differential diagnosis until the disease has reached a critical phase, and even then laboratory facilities are so unavailable and methods so unfamiliar that a conclusive diagnosis is usually remote. It may be concluded that a leptospiral infection should be considered in the differential diagnosis of any illness of a patient whose occupation or circumstances bring him into contact with rat or dog excreta and that laboratory facilities and methods should be refined to insure a correct diagnosis. It is also important that workers and their employers should be informed of the potential hazard of material contaminated by rat and dog excreta and that precautions should be taken to prevent such contamination.

EPIDEMIOLOGY

Incidence.—Leptospiral infections have been recognized more extensively and with increasing frequency since the etiologic agent was first demonstrated by Inada and his colleagues in 1914. For example, in the Netherlands between 1924 and 1938 there were 852 reported cases.² Among those of known source, 257 cases (78 per cent) followed swimming or water accidents and 68 (22 per cent) were of occupational origin. Of the 68 patients 16 were fishermen, half of the 52 others were engaged in work that had to be performed on or in water (divers, seamen, reed cutters

and so on) and the other half were occupied in places overrun with rats (sewers, slaughter houses, butter factories, barns and stables). Thus, in 91 per cent of the cases infection followed contact with water contaminated with rat urine, and in the other 9 per cent there was contact with moist materials similarly contaminated.

In Great Britain between 1933 and 1939 there were 246 authentic cases of leptospiral infection.³ Of these, 144 (58.5 per cent) were in fish workers, 34 (13.8 per cent) in coal miners, 21 (8.5 per cent) in sewer workers, 16 (6.5 per cent) in swimmers, and the remainder were associated with at least seventeen occupations or circumstances. During a single year beginning in October 1933, 138 cases among sugar cane workers in Australia were reported.⁴ Of the 1,232 specimens of blood from persons suspected of suffering from leptospiral infection examined at the Pasteur Institute in Paris during 1933, positive agglutination tests were obtained in 23.1 per cent of the cases.⁵

Seventy-three cases of leptospiral infection in North America that seem authentic are tabulated in the present report. In addition, about half that number were reported as leptospiral infections by the respective authors, but in these the laboratory proof is not regarded as adequate. Several outbreaks of infectious jaundice in which leptospira organisms were implicated only by circumstantial evidence are omitted from our series.

TABLE 1.—Yearly Distribution

1905	1	1934	3
1921	1	1935	.3
1924	2	1936	.3
1925	2	1937	8
1926	5	1938	22
1927	1	1939	18
1928	1	1940	2
1932	1		

The first case of authentic leptospiral infection was that of Stimson.⁶ He described an organism in silver-stained sections of the kidney of a patient who died in 1905 during a yellow fever epidemic in New Orleans. It was not until recently, however, that this organism, which Stimson called ? *Spirochaeta interrogans*, was recognized to be identical with *Leptospira icterohemorrhagiae*. Now it has been suggested that the term *Leptospira interrogans* deserves precedence.⁷ The second reported case occurred in Albany, N. Y., in 1921. This was a laboratory infection that was recognized immediately.⁸

The authentic cases of leptospiral infection in North America are arranged in tables 1, 2 and 3 according to the year, season and locality in which they occurred.

Leptospiral infections are more severe in older patients and far more common in males than in females. These facts are illustrated in a comparison of the Amer-

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4. Cotter, T. J.: *Weil's Disease in North Queensland*, Brit. M. J. Feb. 1, 1936, supp., p. 51.

5. Erber, B.: *La spirochétose icterohémorragique en France en 1923 à 1932, d'après la statistique des épreuves d'agglutinations effectuées*, l'Institut Pasteur, Bull. Off. internat. d'hyg. pub. 26: 1757 (Oct.) 1934; Brit. M. J. 2: 1155 (Dec. 22) 1934.

6. Stimson, A. M.: *Note on an Organism Found in Yellow Fever Tissue*, Pub. Health Rep. 22: 541 (May 3) 1907.

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8. Wadsworth, Augustus, Langworthy, H. Virginia; Stewart, T. Corstian, Moore, Anna C., and Coleman, Marion B.: *Infectious Jaundice Occurring in New York State*, J. A. M. A. 78: 1120 (April 15) 1922.

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The present report is based on part of a thesis on leptospirosis by the senior author that received the Taylor Instrument Company award of the Rochester Academy of Medicine for 1941.

1. Alston, J. M., and Brown, H. C.: *The Epidemiology of Weil's Disease*, Proc. Roy. Soc. Med. 30: 741 (Feb. 1927, Lancet 1: 569 (March 6) 1937.

2. Waich Sorgdrager, B.: *Leptospiroses*, Bull. Health Organ, League of Nations 8: 143, 1939.

ican series with that of the Netherlands,² as shown in table 4. In the American series the mortality is 17 per cent in patients less than 40 years of age, 63 per cent in patients more than 40 years of age and 33 per cent in the entire group. In the Netherlands series the mortality is 7 per cent, 33 per cent and 12 per cent, respectively, for these groups. The higher mortality in the American series is explained in part by the fact that mild forms of leptospiral infection are often overlooked in this country.

The circumstances or occupations involved in the American series are shown in table 5.

Mode of Infection.—Leptospiral infection is considered to be possible through the intact skin and mucous membranes as well as through these tissues after injury. Usually it follows contact of the abraded or sodden skin with infected mud or water, but it may follow the inhalation of water or the bites of rats, dogs or ferrets.¹ One patient who was found to have a latent leptospiral infection said that he had been bitten by rats on several occasions during the eighteen years that he had lived on a city dump. Four other persons who were severely bitten by rats gave no evidence of a leptospiral infection. White rats may become carriers of leptospira organisms and have been responsible for human infections.⁹ One instance has been mentioned in which infection resulted from stepping with an abraded foot on the blood of a rat that had just been killed.¹⁰ Mechanical transmission of the infection has occurred, as illustrated by a case resulting from the bite of a dog that had previously killed a rat and by two other cases following the bites of ferrets that had had contact with rats.¹¹ In another instance the macerated tissue of a rat that had been caught in a dairy machine was spattered in the face of the patient. Occasionally, association of human cases with infected dogs has been reported.¹² Contact with a jaundiced pig has been mentioned.¹³ One case attributed to coitus has been recorded¹⁴ and another considered to be probable in the American series. It has been suspected that contact with postmortem tissues has been responsible for several cases.¹⁵ A number of laboratory infections have been known;¹⁶ among them two are included in the American series.

The vast majority of human leptospiral infections have originated from water or moist objects contaminated with infected urine. In most countries it has been shown that the kidneys of about 20 per cent of the wild rats are infected with leptospira organisms.² Infected dogs also have been recognized as chronic shedders of pathogenic leptospira organisms.¹⁷ White rats,⁹

gophers,¹⁸ foxes,¹⁹ ferrets,²⁰ guinea pigs²¹ and other animals have been infected experimentally or found to be diseased naturally. They must therefore be considered as potential vectors. The urine of infected human beings has also been regarded as hazardous in the spread of the disease.²²

Virulent leptospira organisms have been found to be viable for at least twenty-two days in surface waters,²³ and they have been maintained in artificial mediums for five hundred and eighty-five days.²⁴ Leptospira organisms of debatable pathogenicity for man have been found widely distributed in water, slime and mud.²⁵ Water-borne epidemics have been usually associated with submersion in the water, although one unproved drinking water epidemic has often been quoted.²⁶ Acid soils and water (p_H less than 6.8) have rarely been found to contain leptospira organisms;²² likewise leptospira organisms have rarely been found in soil or water having a concentration of salt above 0.17 per cent.¹ That the organism quickly dies in an acid medium, in

TABLE 2—Seasonal Distribution

January	1	July	12
February	4	August	10
March	4	September	9
April	1	October	9
May	2	November	9
June	7	December	2
Unknown			3

TABLE 3—Geographic Distribution

New York	20	Maryland	2
Ohio	11	New Jersey	2
California	9	Connecticut	1
Pennsylvania	9	Colorado	1
Michigan	7	Washington, D. C.	1
Canada	4	Louisiana	1
Virginia	2	Massachusetts	1
West Virginia	2		

salt water and in strong sunlight is in accord with the known distribution of the human disease.¹

Compensation Awards.—In Germany during 1922 or thereabouts a man developed a fatal leptospiral infection two weeks after falling into a cesspool. This case was analogous to one already published by Stirl. In both instances the right to workman's compensation was recognized.²⁷ Another case was reported in 1927, that of a man who fell into a ditch, swallowed some of the

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11 Alston and Brown.¹ Brown and Cleveland.²⁰

12 Meyer, K. F.; Stewart Anderson, B., and Eddie, B. Canicola Fever—A Professional Hazard, J. Am. Vet. M. A. 93: 332 (Nov.) 1938, Canine Leptospirosis in the United States, ibid. 95: 710 (Dec.) 1939. Schüffner.¹⁴ Stewart, R. D. Leptospirosis in Glasgow Tripe Workers, Lancet. 1: 603 (March 12) 1938.

13 Sander, I. Zur Frage der Uebertragung der Weilschen Krankheit durch Schweine, Arch. f. Hyg. 113: 279, 1935.

14 Schüffner, W. A. P. Recent Work on Leptospirosis, Tr. Roy. Soc. Trop. Med. & Hyg. 28: 7 (June 30) 1934, Brit. M. J. 1: 1001 (June 2) 1934, abstr. Trop. Dis. Bull. 31: 853 (Dec.) 1934.

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16 Schüffner.¹⁴ Uhlenhuth and Zimmermann.⁹ Walch Sorgdrager.²

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19 Catchpole, A. Leptospirosis in Silver Foxes, Vet. Rec. 14: 376, 1934, abstr. Vet. Bull. 5: 267 (May) 1935. Alston and Brown.¹

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21 Mason, N. Leptospirosis Jaundice Occurring Naturally in a Guinea Pig, Lancet. 1: 564 (March 6) 1937, abstr. Trop. Dis. Bull. 34: 709 (Sept.) 1937.

22 Taylor, J., and Gosle, A. N. Leptospirosis in the Andamans, with an Appendix on the Present Knowledge of Leptospirosis Infections, Indian M. Research (Memoir no. 20), March 1931, p. 1, abstr. Trop. Dis. Bull. 28: 739 (Sept.) 1931.

23 van Thiel, P. H. Tests in Connection with Several Unsolved Problems Concerning Epidemiology of Weil's Disease, Nederl. tijdschr. v. geneesk. 81: 6106 (Dec. 25) 1937, abstr. J. A. M. A. 110: 858 (March 12) 1938.

24 Bauer, J. H. The Survival of Leptospira Icterohemorrhagiae in Old Cultures, Am. J. Trop. Med. 11: 259 (July) 1931, abstr. Trop. Dis. Bull. 29: 204 (March) 1932.

25 Buchanan, G. Spirochetal Jaundice, Medical Research Council, Special Report Series, no. 113, London, His Majesty's Stationery Office, 1927, abstr. Brit. M. J. 1: 844 (May 7) 1927, and Trop. Dis. Bull. 24: 704 (Sept.) 1927.

26 Jorge, R. Une epidemie, a Lisbonne, d'ictere hemorrhagique d'origine hydrique contracte per os, nosologie, bacteriologie et epidemiologie, Bull. Office internat. d'hyg. pub. 24: 88, 1932, Lisboa med. 9: 1, 1932.

27 Schurer, J. Weilsche Krankheit als Unfallfolge, Med. Klin. 18: 533 (April 23) 1922, abstr. J. A. M. A. 79: 85 (July 1) 1922.

water and developed a fatal leptospiral infection.²⁸ A connection between the accident and the man's death was affirmed by the court. Some of the 23 cases occurring between 1926 and 1932 in Hamburg were regarded as accidental occupational infections. As examples, 2

TABLE 4.—Mortality, Age and Sex Distribution

	American Series	Netherland Series
Total number of cases	73	374
Age groups:		
Less than 10 years		
10 to 40 years	0	11
40 to 60 years		
Males.....	44	187
Females..	4	23
More than 60 years		
Males..	20	42
Females..	0	7
Unknown		
Males..	4	15
Females..	0	1
Deaths		
Males..	1	70
Females..	0	0
Children..	24	42
Mortality, per cent		
Under 40 years	0	2
Over 40 years	0	0
Total	17	7
	63	33
	33	12

men who worked in the drains, a dock laborer working on a dredger in the harbor and 2 other cases among the crew of a ship overrun with rats may be cited.²⁹ In the fatal case of the Hamburg dock laborer it was necessary to pay compensation.

A legal precedent was established in England in 1925, when compensation was awarded for the death of a coal worker who had a leptospiral infection.³⁰ The award was contested in the Court of Sessions but dismissed. The case in question was *Raeburn v. Lochgelly Iron and Coal Company, Ltd.* (20 B. W. C. C., 637).

In England the Departmental Committee on Compensation for Industrial Diseases in its third report, 1935, came to the following conclusions:

After reviewing the evidence the Committee recommends that infection by *S. icterohemorrhagiae* should entitle a workman to compensation for disablement, but only if confirmed by bacteriological or serological examination. In fatal cases, pathological evidence of the infection should be accepted. In the event of the disease becoming more widespread or of other developments, it may be found that it ought no longer be scheduled as an industrial disease.³¹

The committee found that a recent and acute infection can be diagnosed either serologically by a high or ascending titer or bacteriologically by demonstrating the leptospira in the blood or urine, directly or by animal inoculation. It is difficult to prove that death is caused by the disease, because the changes found after death are not specific; moreover, a patient may die in the second week, before material for laboratory examination has been obtained. Nevertheless, the committee is satisfied that it is reasonably certain that death was caused by the disease if the claimant can show morbid changes compatible with it,

an appropriate history and clinical picture, and the absence of any other recognizable cause of death. Under the Act, the certifying surgeon must examine the workman personally, but the committee considers that it should rest with the workman or some one acting for him to produce the laboratory evidence in support of his application.³²

In England, in an arbitration heard by Judge Dumas at the Westminster County Court on May 17, 1935,³³ £600 compensation was awarded the widow and three young children of a sewer worker who died of a leptospiral infection. On June 29, 1936 an award of £435 6s. was paid the widow of another sewer worker who died of the infection. Testimony presented at the Clerkenwell County Court revealed that the plaintiff abraded his knuckles while using a chisel in the sewer during the early part of August 1935. For a few days nothing was thought of the injury but he became ill, stopped work during the latter part of the month and died on September 11. *Leptospira* organisms were isolated from the patient's blood by the inoculation of a guinea pig. It was brought out by the attorney for the plaintiff that both the injury and the infection occurred while the patient was working but that compensation was entitled whether the injury occurred at work and the infection elsewhere or the injury elsewhere and the infection at work. As to notice of injury being reported to the company, which was a crucial question in the case, it was ruled that it was given "as soon as practicable after the accident," even though it was not reported officially until death (*Stiles v. John Nowlem and Co.*).³⁴ About the same time a miner's wife, the mother of four children, was awarded £600 compensation by the Newcastle County Court. Her husband had contracted a leptospiral infection while working underground in water. The company was not satisfied with

TABLE 5.—Occupational Distribution

10 swimmers
8 sewer workers
6 fish cutters
6 laborers
4 dairy workers
4 poultry dressers
4 who lived in cheap lodging houses
1 abattoir workers
2 laboratory workers
2 veterinarians
2 eating place operators
1 hoseman on a fire boat
1 golfer who waded in a river
1 who had a boll on his forearm which broke while he was searching for a golf ball in dirty, stagnant water
1 butcher
1 who worked and slept in a rat infested kitchen
1 salesman in a meat and vegetable market
1 renovator in an old deserted carpet factory
1 quarry worker
1 machinist in a paper mill, whose wife first had the infection
1 garage mechanic
1 unemployed brick mason
1 who moved wet lumber and waded in a river
1 who lived in a rat infested home and frequently trapped rats
1 who lived on a city dump for 18 years
1 rat catcher
1 who waded in a sewer creek
1 kitchen worker
1 worker on the construction of a gas main
1 schoolgirl
1 housewife
2 occupations not known

the proof of the cause of death until necropsy, when the organisms were demonstrated in one of the kidneys.³⁵

28. Bonning, F. A.: Ein Fall von Weilscher Krankheit, verursacht durch einen Unfall, München, med. Wchnschr. 74:1628 (Sept. 23) 1927, abstr. J. A. M. A. 59:2231 (Dec. 24) 1927.

29. Hegler, C.: Weilsche Krankheit als Unfallfolge, Deutsche med. Wchnschr. 59:298 (Feb. 24) 1933; abstr. Trop. Dis. Bull. 30:370 (June) 1933.

30. Smith, H. E.: Correspondence, Brit. M. J. 1:39 (Jan. 5) 1935.

31. Rolleston, Humphry: Departmental Committee on Compensation for Industrial Diseases: Third Report to the Right Honourable the Secretary of State for the Home Department by the Departmental Committee Appointed to Inquire and Report as to Certain Proposed Extensions of the Schedule of Industrial Disease to Which Section 43 of the Workmen's Compensation Act, 1935, Applies, abstr. Foreign Letters (London). J. A. M. A. 107:1729 (Nov. 21) 1936, and Trop. Dis. Bull. 34:357 (April) 1937.

32. Compensation for Weil's Disease, Annotation; Brit. M. J. 2:722 (Oct. 10) 1936.

33. Compensation for Weil's Disease, Annotation; Brit. M. J. 1:1081 (May 25) 1935.

34. Medicolegal. Weil's Disease Contracted During Employment. Workmen's Compensation Case, Brit. M. J. 2:54 (July 4) 1936.

35. Medicolegal. Weil's Disease Again, Brit. M. J. 2:570 (Sept. 12) 1936.

In Australia, leptospiral infections were also made a compensable disease under the worker's compensation act. In 1936, 57 patients had received compensation, as shown in table 6.

In the United States the first case of leptospiral infection in which compensation was awarded was that of Glotzer.³⁶ The patient was a man aged 33 who was

TABLE 6.—Disability Claimed in Australia for Leptospiral Infections

Period of Incapacity	Number of Cases
1 to 2 weeks.....	7
2 to 3 weeks.....	15
3 to 4 weeks.....	15
4 to 5 weeks.....	9
5 to 7 weeks.....	2
7 to 8 weeks.....	4
10 weeks.....	1
12 weeks.....	1
24 weeks.....	1
Still receiving compensation after 26 weeks.....	1
Still receiving compensation after 36 weeks.....	1

engaged by a wholesale merchant in New York City to fillet fish. He became ill while at work on Oct. 2, 1937. His illness was that of a severe hemorrhagic jaundice, and the diagnosis of a leptospiral infection was established by serologic tests performed at the National Institute of Health. The case was first disallowed, when considered by the New York State Workman's Compensation Division. Following an appeal, however, an award for ten weeks of disability was made on June 2, 1938. Later, consideration was given to the possible causal relationship between the leptospiral infection and more recent symptoms suggesting a chronic cholecystitis, but to date no decision has been made.

Compensation was awarded in a second nonfatal case of leptospiral infection in a fish worker in New York on March 10, 1939.³⁷ The patient was a man aged 36 who became ill on Aug. 7, 1938. A blood specimen taken on the fifteenth day of illness was found to contain a high titer of leptospiral agglutinins.

In a third case of leptospiral infection compensation was also awarded in New York State.³⁸ A man aged 41, a street and sewer cleaner in Newark, fell from a truck on Sept. 22, 1938, injuring his right side. He was hospitalized for eight days because damage to the right kidney was suspected, but his clinical course was uneventful. Thereafter he convalesced in his two room shanty on the bank of the Erie Barge Canal until October 28. At that time he became acutely ill, suffered a hemorrhagic jaundice and died on November 10. The diagnosis of a leptospiral infection was confirmed by the examination of silver-stained sections of the lungs and kidneys. It was held that there was a causal relationship between the injury and the fatal infection. Subsequent independent investigations, however, point to an error in this connection, for thirty-six days elapsed between the accident and the onset of the fatal illness—a period greater than the recognized incubation period of leptospiral infections.

Realizing the potential hazards in certain occupations, employers have already undertaken preventive measures.³⁹ Attempts have been made to reduce the contamination of water and other materials by exterminating rats, eliminating refuse and rat proofing build-

ings. To destroy the leptospira organisms in nature, drainage of stagnant water and disinfection have been tried. An effort has been made to protect workers by the use of suitable clothing and by active immunization.

COMMENT

Leptospiral infection may be considered as an occupational hazard, provided the occupation exposes the patient to rats or dogs, or to moist materials contaminated by the urine of these animals, and provided that the illness follows such exposure by the recognized incubation period of from two to nineteen days. Certain other criteria should be fulfilled before a leptospiral infection is considered as compensable. A nonoccupational source of infection should be eliminated as a probability. If the patient has been swimming or wading in water that may have been contaminated by rats or dogs, it is more likely that this was the source of his infection. If the patient has had contact with a pet dog, the animal should be studied for evidence of a leptospiral infection. If the dog is proved to be a shedder of leptospira organisms that are pathogenic for guinea pigs, it is probable that infection arose from this source. A rat-infested residence must also be eliminated as a probable source of the infection. It is imperative to prove that the patient is suffering from a leptospiral infection and not from some other illness that may be easily confused with the leptospiral disease.

Of the laboratory methods available for the positive diagnosis of leptospiral infections, the most conclusive is the reproduction of the disease in guinea pigs that have been injected with macerated tissue or fluids from the patient, and recovery of leptospira organisms from these animals. Properly controlled serologic tests are reliable when the titer is found to be high or rising. An instance has been encountered in which a low agglutinin titer persisted throughout an illness that was confused clinically with a leptospiral infection but that was finally considered to be of other causation.⁴⁰ Histologic sections of the patient's tissues stained by silver technics are acceptable evidence, provided organisms that have the characteristic morphology and staining characteristics of leptospira organisms are found.

Unreliable laboratory technics include those in which darkfield microscopy is used. Confusing artefacts are common in body tissue and fluids, as pointed out repeatedly in the medical literature.⁴¹ In spite of this knowledge, many cases have been reported in the United States in which the diagnosis of a leptospiral infection was based solely on the finding of "organisms resembling leptospira" by darkfield microscopy. Pseudo-spirochetes have been observed in tissues and fluids of persons in good health and in those of patients suffering from other diseases. Many specimens "swarming" with these artefacts have been injected into susceptible guinea pigs without producing leptospiral infection. Other specimens exhibiting no leptospiral forms by darkfield microscopy have proved to be

40. McKeon, J. A., and Brown, H. C.: An Unusual Case of Jaundice in a Miner, *Brit. M. J.* 2: 174 (July 25) 1936.

41. Artefact Spirochetes, Current Comment, *J. A. M. A.* 74: 1783 (June 26) 1920. Ebersohn, Frederick: Spirochetes Derived from Red Blood Corpuscles, *Arch. Dermat. & Syph.* 1: 638 (June) 1920; abstr. *J. A. M. A.* 75: 200 (July 17) 1920. Kato, J.: On Spirochaeta-like Bodies in the Blood, *Juzenkwaï Zasshi*, April 1925, vol. 30; *Japan M. World* 5: 358 (Dec. 15) 1925; abstr. *Trop. Dis. Bull.* 23: 607 (Aug.) 1926. Koga, G., and Otsubo, I.: Spirochete-like Bodies in Cultures of Certain Bacteria, *Kitasato Arch. Exper. Med.* 3: 207 (Dec.) 1919; abstr. *J. A. M. A.* 75: 69 (July 3) 1920. Schultz, E. W.: The Pseudo-spirochetes Derived from Red Blood Cells, *J. Lab. & Clin. Med.* 8: 375 (March) 1923. Thompson, J. G.: The Common Occurrence of Pseudo-spirochetes in the Blood of Blackwater Fever Cases and of Normal Human Beings and Animals When Using the Technic of Blanchard and Lefrou, *J. Trop. Med. & Hyg.* 26: 251 (Aug. 1) 1923.

36. Glotzer, Solomon: Weil's Disease: Report of a Case in a Fish Worker, *J. A. M. A.* 110: 2143 (June 25) 1938.

37. Farrell, E.: Weil's Disease—A Compensable Infection in New York State, *New York State J. Med.* 39: 1969 (Oct. 15) 1939.

38. Kaufman, J. J.: Personal communication to the authors, 1940.

39. Bonning,²³ Glotzer,³⁶ Taylor and Goyle.²²

infectious for guinea pigs. Several American authors recently interviewed have expressed the opinion that they have confidence in their own darkfield technics yet are skeptical of the results of others. Others have admitted that they could not rely on their own darkfield observations and that they would not accept those of others.

Several cases have been studied carefully in which the clinical history or postmortem findings were compatible with a leptospiral infection, and yet no positive evidence of an infection, as ascertained by multiple animal injections, serologic tests or the study of histologic sections has been found. A diagnosis of leptospiral infection that is based solely on the clinical history, darkfield microscopy or gross postmortem findings is therefore unreliable.

SUMMARY

Certain occupations expose workers to a risk of leptospiral infection that is greater than the risk run in private life. Compensation for an industrial infection is therefore justified, provided nonoccupational circumstances can be ruled out as more likely sources of the infection and that the leptospiral etiology can be established conclusively.

Leptospiral infection should be considered as an occupational hazard—not as an occupational disease.

SPECIAL NOTE—Since the present paper was accepted for publication, we have learned of more than a score of additional cases, details of which will be reported in a forthcoming paper on the incidence of leptospiral infections in the United States

THE TREATMENT OF PEPTIC ULCER WITHOUT ALKALIS

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The use of alkaline substances in the management of peptic ulcer is almost universal, and such treatment is recommended in nearly all the current textbooks dealing with the subject.¹ It is commonly assumed that complete neutralization of gastric acidity represents the ideal condition for ulcer healing, although no proof of this assumption exists. Furthermore, it is not certain that the highly alkaline stomach content obtained periodically in the course of alkali therapy is conducive to healing. That the conventional methods of treatment are not entirely satisfactory is manifest by the fact that scarcely a year passes without one or more new "ulcer treatments" being advocated. At frequent intervals new kinds of neutralizing agents, supposedly with better virtues or fewer evils, are recommended.

The disadvantages of alkali therapy, which have been commonly recognized during its wide use, are:

1. Alkalis may produce secondary acid secretion. Crohn and Reiss² state that alkalis are second only to

histamine in their power to stimulate acid secretion. Wosika and Emery³ estimate that in the Sippy treatment fifty times as much alkali is given as would be required to neutralize all the acid normally secreted by the stomach, but even so the acidity is not entirely controlled. Two explanations are offered for this fact. The alkali may stimulate gastric secretion or it may induce more rapid emptying of the stomach. They express the belief that both factors are involved.

2. On occasion, alkalosis may be produced. This is particularly true of patients with pyloric obstruction, renal impairment or severe anemia. Eisele⁴ has shown that all patients following the Sippy treatment suffer from some degree of chemical alkalosis, with an elevation of both the p_H and the carbon dioxide content of the plasma above normal. Although the patients who suffer from a full blown clinical alkalosis are relatively few, instances are numerous in which minor symptoms require the withdrawal of alkalis for a few days.

3. Some of the alkalis, notably calcium carbonate and phosphates and bismuth compounds, cause constipation. In most cases it is necessary to add magnesia as a cathartic, and in some cases an undesirable cathartic colitis develops.

4. As has been shown by Eisele,⁵ the use of alkalis may result in the formation of kidney stones.

5. The use of aluminum hydroxide and aluminum sulfate, which recently has become quite widespread, may have deleterious effects. Therapeutic doses may interfere with the absorption of inorganic phosphates from the intestinal tract, thereby deranging the calcium metabolism of the body.⁶ Constipation and fecal impaction may occur,⁷ and even intestinal obstruction has been reported.⁸

For many years one of us (G. F. D.) has treated peptic ulcers essentially without the use of alkalis; that is, they were given only in individual doses when necessary to control pain early in the course of treatment. It is our purpose in this report to show not only that many patients recover from peptic ulcer without alkali therapy but also that it is doubtful whether the use of alkalis ever results in more rapid recovery. This idea is not new. Brinton⁹ in 1862 said that many patients get well with diet alone, but this seems to have been largely forgotten.

EVALUATION OF EVIDENCE OF HEALING

The difficulty of evaluating any regimen of ulcer treatment is well recognized. Under a wide variety of treatments, or with no treatment at all, ulcer pain may disappear and the patient may be completely comfortable within a few days, yet roentgenologic and pathologic evidence may show an unhealed ulcer still present.

3 Wosika, P. H., and Emery, E. S.: The Effectiveness of the Sippy Regimen in Neutralizing the Gastric Juice of Patients if the Amount of Alkali Is Not Varied, *Ann. Int. Med.* 9:1070 (Feb.) 1936.

4 Eisele, C. W.: Changes in the Acid Base Balance During Alkali Treatment for Peptic Ulcer, *Arch. Int. Med.* 63:1048 (June) 1939.

5 Eisele, C. W.: Role of Alkali Therapy for Peptic Ulcer in Formation of Urinary Calculi, *J. A. M. A.* 114:2363 (June 15) 1940.

6 Street, H. R., and Barlow, O. W.: The Relative Effects of Aluminum Hydroxide and Aluminum Sulfate on the Absorption of Dietary Phosphorus by the Rat, *Am. J. Physiol.* 133:465 (June) 1941.

7 Kraemer, Manfred: The Use of Hydrated Magnesium Trisilicate in Peptic Ulcer, *Am. J. Digest. Dis.* 5:422 (Sept.) 1938.

8 J. F., and Sutherland, C. G.: Use of Colloidal Aluminum Hydroxide in Treatment of Peptic Ulcer, *Canad. M. A. J.* 42:140 (Feb.) 1940.

9 Havens, W. F.: Intestinal Obstruction Caused by Colloidal Aluminum Hydroxide, *J. A. M. A.* 113:1564 (Oct 21) 1939.

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1. Brown, T. R., in Cecil, R. L.: *A Textbook of Medicine*, ed. 4, Philadelphia, W. B. Saunders Company, 1937.
Balfour, D. C.: *The Stomach and Duodenum*, Philadelphia, Saunders Company, 1936.
Hurst, A. F., and
and Duodenal Ulcer, London, Oxford University Press, 1937.
William: *The Principles and Practice of Medicine*, revised by H. A. Christian, ed. 13, New York, D. Appleton Century Company, Inc., 1938.
Palmer, W. L., in Forster, S. A.: *Diseases of the Digestive System*, Philadelphia, Lea & Febiger, 1941.
Price, F. W.: *A Textbook of the Practice of Medicine*, ed. 5, London, Oxford University Press, 1937.

2 Cited by Hurst and Stewart¹

Gaither,⁹ quoting Hurst and Eusterman, has reported numerous instances in which ulcers were "cured" by parenteral treatment, the patient being entirely symptom free but an ulcer as large as ever being found at operation.

The disappearance of occult blood from the stool is taken as an objective sign of healing, but this too is not

METHODS AND MATERIAL

In the present study 41 patients with peptic ulcers were selected on the basis that their x-ray studies before treatment showed definite ulcer craters and that subsequent studies were made at sufficiently frequent intervals to indicate the course of the crater. As this was the only criterion for selection, this group should not show a more favorable response to treatment than the series as a whole. Actually, this selection probably affected the group adversely, for it included more than its share of severe cases requiring prolonged periods of hospitalization and but few completely ambulatory patients. This was true because the patients with long hospitalization afforded better opportunities for the repetition of x-ray studies at sufficiently short intervals. Six of the patients had suffered recent gross hemorrhages.

These patients were given 1 to 4 ounces (30 to 120 cc.) of a mixture of equal parts of milk and cream at hourly intervals during the day and often during the early evening. In a few instances in which cream was poorly tolerated, milk alone was given. When all distress was relieved, small amounts of bland foods were added gradually. Added vitamins were given in most cases. The importance of physical and mental rest was emphasized. Atropine was given in some cases. In 8 cases a few single doses of alkali were given to control pain. Attention was directed to the removal of foci of infection when such were present. Therapeutic aspiration of the stomach at bedtime, a com-

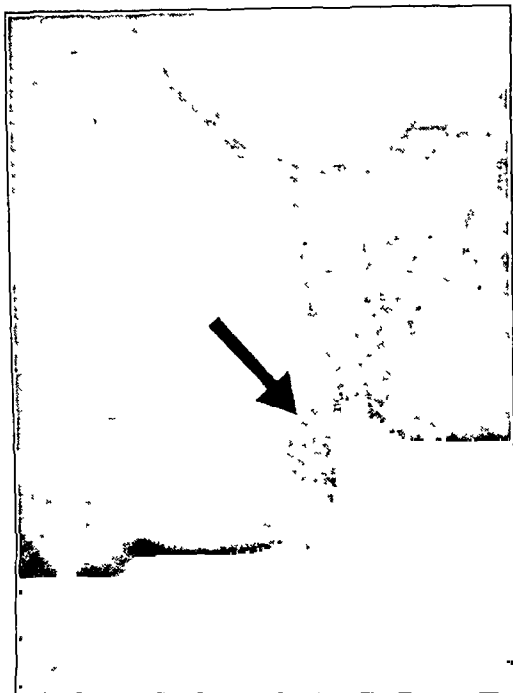


Fig 1 (case 41)—Ulcer crater of the lesser curvature of the stomach in profile view. The crater measures 24 mm. in diameter and 9 mm. in depth. After forty-five days of treatment the crater had disappeared completely, leaving only a scar that was detected with difficulty.

wholly reliable. The disappearance of the gastric ulcer niche as detected by x-ray studies has for many years been accepted as the most satisfactory evidence of healing.¹⁰ But, until Berg's controlled compression technic was introduced into this country in recent years, similar observations were not feasible for duodenal ulcers. Berg reported finding craters in 50 per cent of his cases of duodenal ulcer, but prior to the use of this technic craters in duodenal ulcers were seen in only the occasional case. Templeton, Marcovich and Heinz¹¹ state that "the best clinical evidence of activity and healing is the roentgenologic demonstration and the progressive and complete disappearance of the crater. Our observations confirm those of others that a large percentage of niches persist for a considerable time after symptoms are clinically relieved." These authors as well as others¹² warn that the disappearance of the crater is not necessarily synonymous with complete healing. The crater may be filled with granulation tissue but not yet epithelized. On occasion the crater may be filled with food, mucus or blood clot. Nevertheless, crater disappearance is the best clinical criterion of healing.

9 Gaither, E. H. Therapy of Peptic Ulcer. Conservative Versus Radical, *Am J Digest Dis & Nutrition* 2:736 (Feb) 1936.

10 Hamburger, W. W. Roentgenological Studies in the Healing of Gastric and Duodenal Ulcers, *Am J M Sc* 155:204 (Feb) 1918.

11 Templeton, T. E., Marcovich, A. W., and Heinz, T. E. Duodenal Ulcer. The Value of the Roentgenologic Demonstration of Crater, *J A M A* 111:1807 (Nov 12) 1938.

12 Walko, K. Concerning the Pain, the Latent Phase and Chronicity of Peptic Ulcer, *Mitt a d Grenzgeb d Med u Chir* 39:1, 1926.

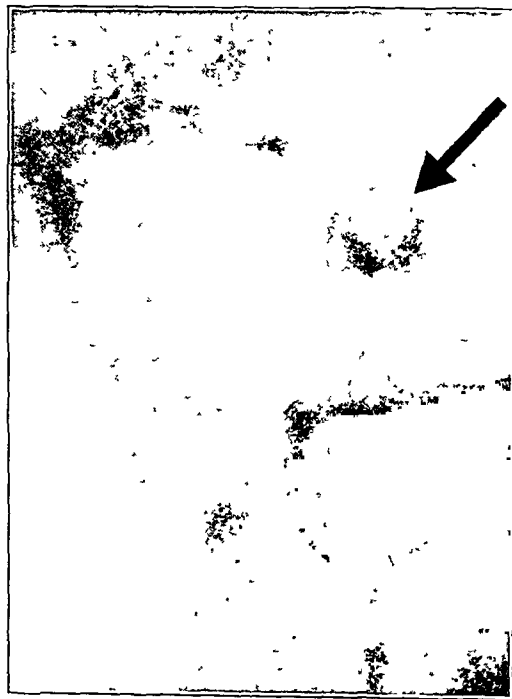


Fig 2 (case 5)—Duodenal ulcer crater 23 mm in diameter (shown to be 15 mm deep in other views). After forty-eight days of treatment the crater had disappeared but definite bulb deformity remained. Subsequent x-ray studies confirmed the disappearance of the crater.

mon custom under many regimens, was not done. Instead, one or more bedtime aspirations were done when treatment was begun, and in cases showing residuum the quantity of milk and cream per hour was reduced until the stomach was practically empty at bedtime. We believe that the results so obtained are better

than giving an arbitrary amount of feedings and then aspirating the retained food every night. We further made an attempt to adjust the volume of the hourly feedings so as to induce the complete comfort of the patient.

Seven patients were suffering from gastric ulcers¹³ and 34 from duodenal ulcers. Two of the latter group were followed through two distinct attacks, thus making 36 duodenal ulcers in the series. Twenty-six of the patients were men and 15 were women. The ages ranged from 23 to 74 years, the average age being 40 years. Five were entirely ambulatory and 36 were hospitalized for periods varying from three to fifty-two days, the average being twenty-four days.

RESULTS

The time of disappearance of the x-ray crater in each case is represented by a bar in the accompanying chart. The left end of the bar indicates the time (days of treatment) of the last x-ray examination at which a crater was demonstrated, and the right end the time of the first examination at which the crater had disappeared. In 25 cases the last demonstration of the crater was at the initial examination. It will be noted that in 17 cases an average of seventy-six days (ranging from fifty-two to one hundred forty days) elapsed between these two pertinent examinations. Unfortunately, this introduced a considerable latitude as to the actual time

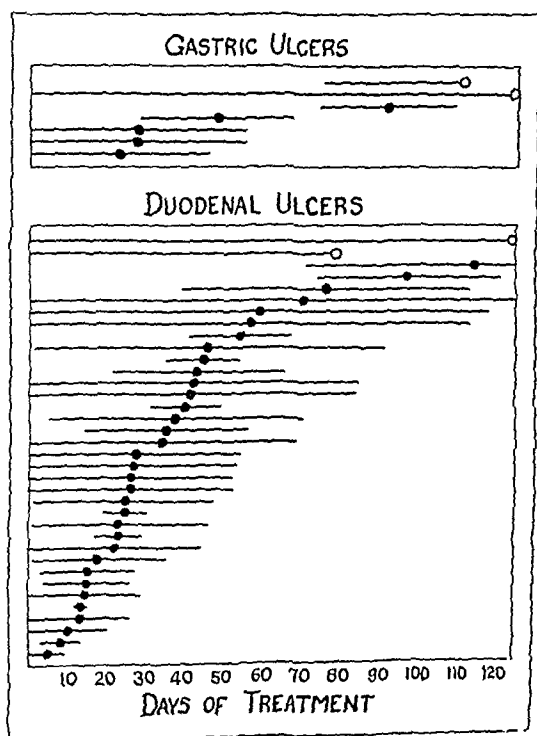


Fig 3.—Time of x-ray crater disappearance. Each case is represented by a bar, the left end of which indicates the time of the last x-ray examination at which a crater was demonstrated; the right end indicates the first examination at which the crater had disappeared. The midpoint of each bar, indicated by a dot, represents the most probable time of crater disappearance. A circle at the right end of a bar indicates that the crater was still present at the last examination.

of crater disappearance. The midpoint of each bar, indicated by a dot, represents the most probable time of disappearance (the mean time of crater disappearance).

13. In 1 case, two craters were followed to healing gastroscopically instead of roentgenologically.

The table summarizes the time of the disappearance of the craters in the cases of duodenal ulcer. It will be noted that 86 per cent had disappeared within seventy-five days (mean time of crater disappearance) and that in 70 per cent of the cases the crater was actually demonstrated to have disappeared within seventy-five days. In 2 cases (6 per cent) the craters did not dis-

Disappearance of X-Ray Crater in Duodenal Ulcers

Days of Treatment	Examination When Crater Had First Disappeared		Mean Time of Crater Disappearance	
	No. of Cases (Cumulative)	Per Cent	No. of Cases (Cumulative)	Per Cent
Within 15 days	3	5	8	22
Within 30 days	10	28	18	50
Within 45 days	13	36	27	75
Within 60 days	21	58	30	83
Within 75 days	25	70	31	86
More than 75 days	34	94	34	94
Nonhealing	2	6	2	6

appear completely although they decreased in size considerably. One of the patients was symptomatically well and apparently in good health after the first week of treatment. In the second case a duodenal ulcer crater disappeared promptly without the use of alkalis one year before, but in the attack under consideration the crater persisted for seventy-five days, although it became shallow with indistinct margins, thus showing definite evidence of healing. Subsequently the crater disappeared with the administration of alkalis.

The cases of gastric ulcer were too few for adequate analysis, but in general they followed a similar course. Again, in 2 instances healing did not take place. In 1, surgical treatment was necessary after one hundred and ten days. The other patient left the hospital against advice after three days of treatment and he followed management very poorly. His ulcer distress had been present for over twenty years.

No definite correlation was found between the age of the patient and the time of crater disappearance or between the duration of ulcer history and crater disappearance.

As others have noted, complete relief of symptoms occurred in nearly all cases long before the crater disappeared. In 31 cases all symptoms were controlled within one week. In 9 cases the progress notes concerning relief from pain were inadequate. In the case in which the duodenal ulcer did not disappear during the second attack, symptoms persisted irregularly for many weeks.

The benzidine reaction of the stools was negative in 14 cases despite the presence of a crater. In 12 cases a positive test became negative before the x-ray examination which first showed the disappearance of the crater. In 1 case a positive benzidine test persisted after the crater disappeared.

COMMENT

These data demonstrate that healing of peptic ulcers will progress satisfactorily without the attempted neutralization of gastric acidity with alkalis. It appears that it is only in the exceptional case that recovery will take place on alkali therapy and not without it. On the other hand, we have observed several patients who

did poorly on Sippy treatment whose response was notably better with the management described in this paper.

The speed of recovery compares favorably with that under any other type of treatment. We were unable to find in the literature a series of duodenal ulcers treated by the Sippy regimen and adequately observed by x-ray studies of crater behavior. However, the results in our series of duodenal ulcer compare very favorably with those obtained by Jordan and Boynton¹⁴ in their series of 41 cases of gastric ulcer treated by Sippy management—although several authors¹⁵ have stated the belief that gastric ulcers heal more rapidly than duodenal ulcers. In their series of 41 patients with ulcers of the lesser curvature, 9 were operated on because of inadequate diminution of crater or persistence of symptoms, 13 healed, with crater disappearance, within twenty-one to twenty-eight days of hospitalization, and 19 healed within four to ten weeks after leaving the hospital.

Our results with milk and cream without alkalis are not surprising in view of the observations of Wosika and Emery.³ They performed half hour titrations of free and total acid of the gastric contents of ulcer patients receiving hourly feedings of milk and cream, and subsequently of the same patients receiving the first day Sippy treatment (hourly milk and cream plus hourly powders on the half hour). On the Sippy treatment the free acid was depressed an average of only 2 clinical units in comparison with the titrations with milk and cream alone. The patients were then divided into four groups according to the effectiveness of acid control, and no appreciable advantage of the first day Sippy treatment over the treatment with milk and cream was noted.

The treatment of peptic ulcer is usually considered to consist of two phases, the treatment of the immediate attack and the prevention of recurrences. Peptic ulcer is notoriously a chronic disease subject to recurrences, perhaps spontaneously, perhaps under adverse conditions such as fatigue, emotional stress and infections. It is not within the scope of this paper to discuss the prevention of recurrences. It is illogical, however, to expect the use of alkalis to prevent recurrences unless one is willing to advise such use throughout the life of the patient.

In many instances such ingestion of alkali would probably be more detrimental than the ulcer itself. Except for general hygienic measures, adequate prevention of recurrences awaits the solution of the problem of the etiology of ulcer.

SUMMARY

Under hourly treatment with milk and cream without the use of alkalis, the speed of healing of gastric and duodenal ulcers compares favorably with that under other methods of treatment. Such treatment of a series of 41 patients brought about (1) the prompt disappearance of symptoms and the complete comfort of the patient, (2) the disappearance of occult blood from the stool when it was present and (3) the disappearance of the x-ray crater.

14. Jordan, S. M., and Boynton, L. C.: Treatment of Gastric Ulcer, *Tr. Am. Therap. Soc.* 34: 56, 1934.

15. Clark, D. M., and Geyman, M. J.: Roentgen Evidence of Healing in Duodenal Ulcer, *J. A. M. A.* 102: 107 (Jan. 13) 1934. Delario, A. J.: A Roentgenologic Follow up of One Hundred and Twenty Five Cases of Peptic Ulcer, with Clinical and Laboratory Findings, *Am. J. Roentgenol.* 34: 190 (Aug.) 1935.

Clinical Notes, Suggestions and New Instruments

ALOPECIA FROM CYVERINE HYDROCHLORIDE

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Our purpose in this paper is to report the occurrence of alopecia following the use of a new antispasmodic drug. In this case, the defluvium followed the daily ingestion, for thirty days, of cyverine hydrochloride (Stearns) and rapidly progressed to involve the entire scalp.

REPORT OF CASE

History.—A white woman aged 49 was seen in consultation on June 6, 1941, complaining of an extreme degree of falling out of the hair of ten days' duration. She gave a history of spasmodic pain in the lower part of the abdomen for the previous three months, for which she had been under the care of her family physician. During this period, several examinations including roentgen ray and proctologic studies

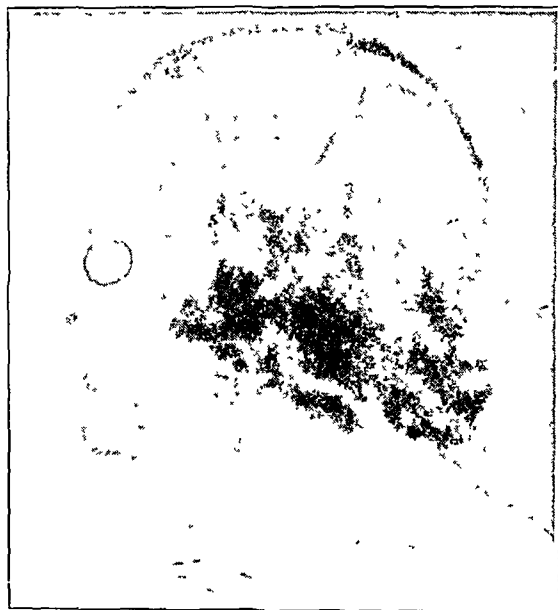


Fig 1—Appearance of scalp on June 23, showing loss of hair from the temporo occipital region.

of the intestinal tract disclosed no abnormalities, and the diagnosis of a functional intestinal disorder was made. On April 24 the patient was instructed to take cyverine hydrochloride (Stearns), an antispasmodic, for the relief of her symptoms.

She took 40 mg. daily for three days and then 80 mg daily for four days. At that time, she complained of a sensation of numbness of the arms. She continued to take the pills until May 9, after which she stopped taking the medication because she had finished her prescribed supply (800 mg.). On May 18 she again took 40 mg. daily, but within three days the patient noticed that ordinary combing of the hair resulted in the accumulation of hundreds of hairs on the comb. This defluvium increased so rapidly that within ten days the occipital region of the scalp was almost entirely devoid of hair. At the same time the patient noticed that her skin was extremely dry and was covered with fine, branny scales. She also observed that her eyebrows and eyelashes were turning white.

The patient also gave a history of having had her hair dyed several times during the past three years. The last application of dye was made two weeks prior to the occurrence of alopecia.

The same dyes were employed at that time as during the three year period. The patient did not experience any local reactions on the scalp at any time following the application of these dyes.

Examination of the skin at this time showed a loss of axillary hair in addition to the diffuse alopecia of the scalp. The skin of the entire body showed a mild type of exfoliative dermatitis

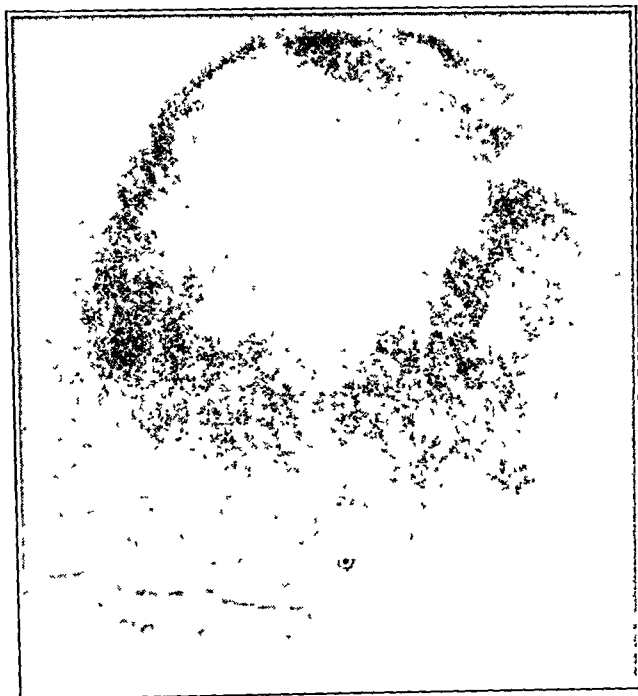


Fig. 2—Appearance of occipital area on June 23

and was beginning to peel in small flakes over the forearms and legs. On questioning, the patient stated that she had perspired so infrequently in the previous two weeks as to render unnecessary the use of a proprietary antiperspirant preparation. Prior to this episode the antiperspirant preparation had to be applied daily.

Laboratory Examinations.—Urinalysis consistently showed the urine to be normal. The hemoglobin of the blood was 12.6 Gm., the erythrocyte count was 4,600,000 and the leukocyte count was 6,200 with 58 per cent neutrophils, 34 per cent lymphocytes, 6 per cent monocytes and 2 per cent eosinophils. The blood Wassermann and Kahn reactions were negative. Patch tests performed on the back with the dyes which had been applied to the patient's scalp gave positive reactions (La Rue dye). The basal metabolic rate was within normal limits.

Course.—The patient is still under observation and treatment. The falling out of the hair has been continuous and progressive. At present there is very little hair left on the scalp and in the axillas, and the eyelashes and eyebrows are almost white.

COMMENT

The definition of alopecia states that it is a partial or total loss of hair. When it occurs in patches, it is designated alopecia areata.

The etiology of alopecia is unknown in the majority of cases. Controversy and speculation is still rampant concerning the cause or causes of such conditions as premature alopecia, seborrheic alopecia and alopecia areata. However, certain definite etiologic factors have been recognized. It is known that alopecia may follow the high temperatures which occur in pneumonia, influenza and typhoid. It is also known that certain endocrine changes may lead to alopecia, as in myxedema, cretinism and acromegaly. Alopecia may occur from local disease, especially following burns, furunculosis, ulcerating disease, especially following burns, furunculosis, ulcerating syphilids and cicatrizing cutaneous diseases (pseudopelade, folliculitis decalvans). When alopecia occurs from local causes,

it is always due to destruction of the hair follicles by ulceration and by the formation of scar tissue. Thus it is conceivable that alopecia might follow the application of strong dyes to the scalp, although there have been no reports of such an occurrence in the literature. However, in such an instance the alopecia would be preceded by inflammation, destruction of the hair follicles by ulceration and by the formation of scar tissue. None of these processes occurred in this case and the scalp was normal in every respect except for the absence of hair. A dye reaction would also lead to brittleness of the hair, so that there would be many short stumps present in the thinned areas. In this case, the hairs were of normal texture and definitely not brittle. When a moderate degree of traction was exerted on the hair shaft it slid out of its follicle very easily but did not break any more readily than normal hair.

Alopecia from drugs, although uncommon, has been reported several times. The use of gold salts in the treatment of arthritis resulted in alopecia in 2 reported cases,¹ and in 1 of these² the loss of hair on the scalp was total in extent and was not followed by regrowth. The use of thallium salts for epilation has been practiced for a period of more than ten years in the treatment of tinea capitis.³ The thallium salts are not unattended by toxic symptoms and the drug must be used judiciously. Alopecia areata has been artificially produced by the intravenous injection of quinine hydrochloride and

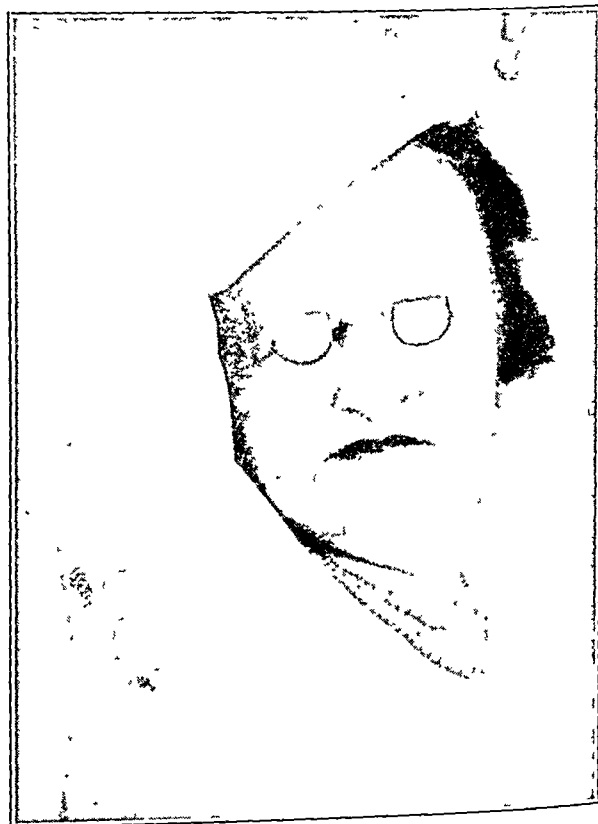


Fig. 3.—Appearance of right axilla on June 23, showing loss of hair

ethyl carbamate.⁴ The so-called toxic theory, which states that alopecia areata is due to the action of certain toxins on the autonomic nervous system and on the hair itself, was

1. Belinfante, A. J. G. Change in Nails and Alopecia After Gold Dermatitis, *Nederl. tijdschr. v. geneesk.* 81:2613-2614 (June 5) 1937. Bertier and Bocquillon.²

2. Bertier, L., and Bocquillon, P. Total Persistent Alopecia Following Gold Sodium Thiopropion Sulfonate Therapy for Arthritis, *Bull. Soc. franç. de dermat. et syph.* 29:1335 (Nov.) 1932.

3. Pardo-Costello, V.; Mestre, J. J., and Rio, Enrique: Tinea of the Scalp. Treatment with Thallium Salts, *Arch. Dermat. & Syph.* 19:409 (March) 1929.

4. Bergman, Alexander. Alopecia Areata, Artificially Produced by Intravenous Injection of Quinine Hydrochloride and Ethyl Carbamate, *Arch. Dermat. & Syph.* 35:285 (Feb.) 1937.

substantiated in some measure by the finding of arsenic and lead in the body fluids and tissues in a series of these cases.⁵ The presence of these heavy metals in the body was accounted for by the widespread prevalence of arsenic and lead in foods, drugs and liquids due to contamination and spray residue. Chronic arsenical poisoning has long been recognized as a causal agent in alopecia and precancerous keratoses.

In this case, the drug which produced the alopecia is known as cyverine hydrochloride (Stearns). The chemical formula is methyl-bis-beta-cyclohexyl-ethyl-amine hydrochloride. It is a white crystalline powder, soluble in water up to 1 per cent and freely soluble in alcohol. It has a bitter taste, and on mucous membranes it has a mild local anesthetic effect. The empirical formula is $C_{17}H_{33}N.HCl$.

The structural formula of the cyverine base closely resembles that of papaverine. The structural formulas of cyverine and papaverine differ mainly by a break in the isoquinoline ring in cyverine, by which a prolongation in the chain is produced, each end of the chain carrying a cyclohexyl ring.

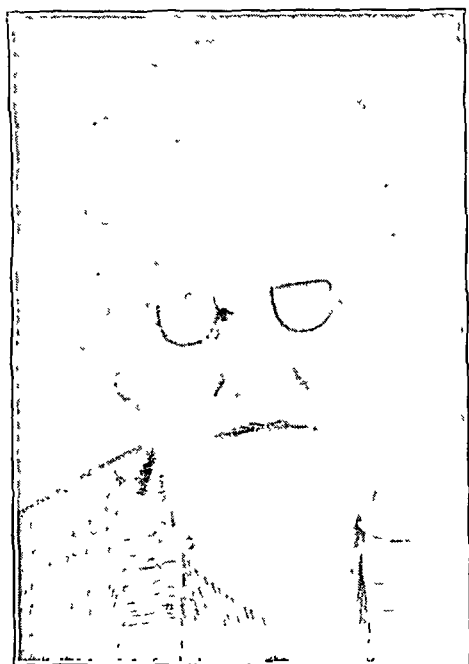


Fig 4—Appearance of scalp on July 14, showing almost total loss of hair.

Pharmacologic studies have shown that cyverine hydrochloride acts directly on smooth muscle tissue because it produced complete relaxation of smooth muscle sections (small intestine of rabbit) when the latter were (1) contracted by such parasympathetic stimulants as pilocarpine and arecaline, (2) contracted by a smooth muscle stimulant such as barium chloride, (3) atropinized and contracted by barium chloride and (4) nicotinized and contracted by barium chloride.

Clinical studies of 31 cases⁶ reported but not cited by the manufacturer showed that cyverine hydrochloride has a powerful antispasmodic effect. It is apparently of value in disorders such as pylorospasm and other spastic conditions affecting the gastrointestinal tract. In this series of cases no toxic symptoms were reported other than nausea, "heartburn" and slight dryness of the throat.

The suggestion is advanced that the effects of the drug on smooth muscle caused complete relaxation of the erector pili muscles around the hair follicles. In this manner loosening of the hair shaft and subsequent alopecia may have occurred.

5. Myers, C. N.; Throne, Binford, and Kingsbury, J.: Toxic Action of Metals in Alopecia Areata, New York State J. Med. 33:991 (Aug. 15) 1933.

6. Form 2625, a pamphlet entitled "Cyverine Hydrochloride," issued by Frederick Stearns & Co, Detroit.

SUMMARY

1. A white woman aged 49 years ingested 920 mg. of cyverine hydrochloride (Stearns), an antispasmodic drug, within a period of thirty days. At the end of this time alopecia of the scalp developed.

2. The alopecia was progressive and resulted in approximately complete loss of hair from the scalp.

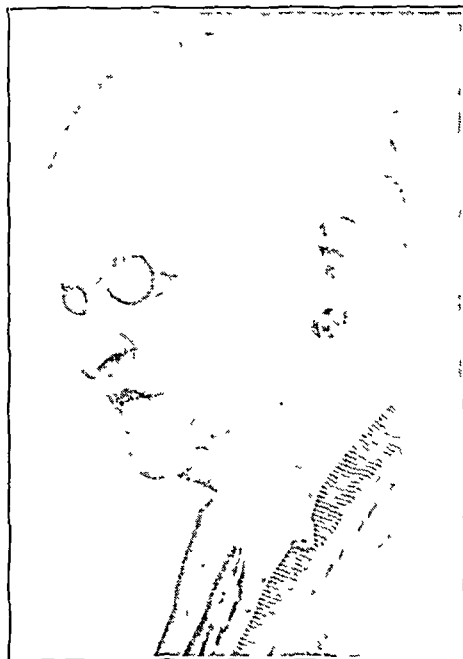


Fig. 5—Another view of patient on July 14

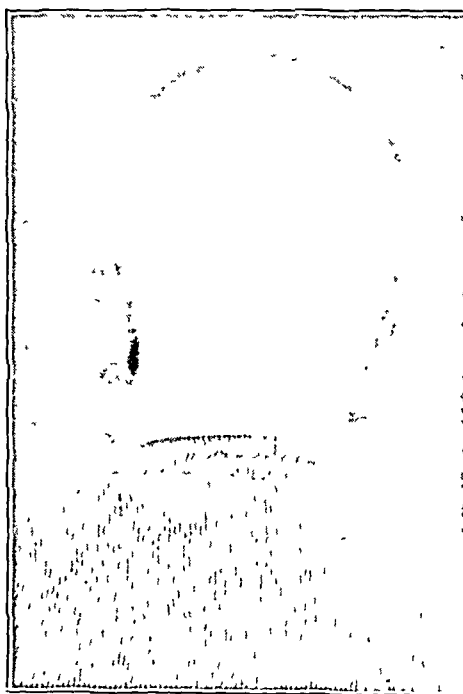


Fig 6—Another view of patient on July 14

3. The eyebrows and eyelashes turned a grayish white shortly after the occurrence of alopecia.

4. There was an associated exfoliative dermatitis of the skin and a diminution in perspiration.

2 East Fifty-Fourth Street.

HYPERTENSION IN A PATIENT WITH BILATERAL
RENAL INFARCTION

CLINICAL CONFIRMATION OF EXPERIMENTS IN ANIMALS

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Goldblatt,¹ in a series of historic experiments, showed that hypertension was induced in animals by constricting the renal arteries. Numerous investigators have confirmed and amplified these observations on various animals, and it is now universally admitted that lasting hypertension follows the experimental induction of partial renal ischemia.

Goldblatt² later showed that hypertension also occurred following complete occlusion of one renal artery provided the renal vein was not obstructed.

Taquiní,³ modifying the Goldblatt procedure, showed that a temporary rise in blood pressure occurred in dogs on the reestablishment of the circulation in kidneys rendered completely ischemic for a period of from four to six hours. Taquiní's observations have been confirmed by us on cats, dogs, rats and guinea pigs,⁴ although negative results were obtained in

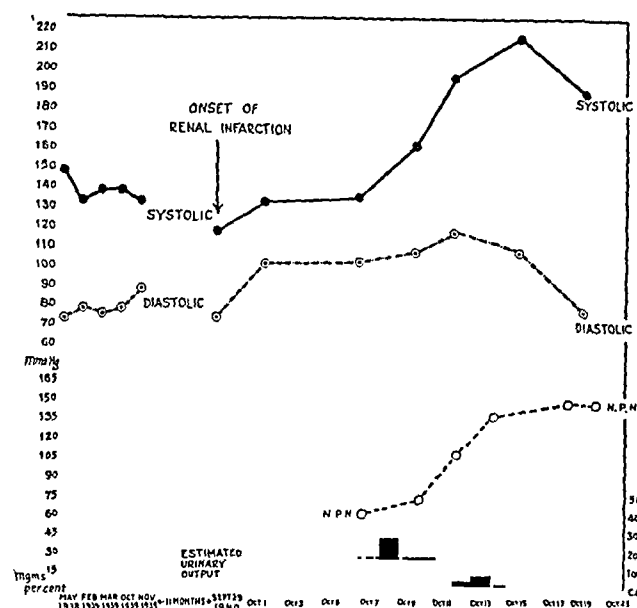


Fig. 1.—The effect of renal infarction on blood pressure, nonprotein nitrogen and urinary output. Note rise in blood pressure and nonprotein nitrogen; also decrease in the estimated urinary output.

rabbits.⁵ The mechanism responsible for the form of hypertension induced by the Taquiní method has been the subject of extensive investigation. It was found that an extract of a kidney made completely ischemic by clamping the renal pedicle for from four to six hours contained more pressor substance (renin) than that prepared from the opposite kidney

with the circulation unimpeded.⁶ Later it was shown that the same pressor substance or a similar one was present in perfusates of completely ischemic kidneys but absent from perfusates of normal kidneys as well as from perfusates of ischemic tissues other than kidney. It was conclusively proved that the pressor substance found in perfusates of completely ischemic kidneys is the cause of this type of hypertension,⁷ and there was strong evidence to show that this pressor material is renin or a closely related substance.

The sequence of events during complete renal ischemia and following the reestablishment of the renal circulation can be reconstructed as follows: As a result of complete renal ischemia more renin is formed in the kidney, or that which is present becomes more readily available for extraction. Normally the kidney secretes little or no renin, since perfusates of normal kidneys do not have pressor properties. When the kidney is deprived of its blood supply, pressor material passes from the depots of manufacture and storage through the vascular endothelial cells into the renal blood vessels. A small amount of the pressor substance reacts with some of the plasma in these vessels to form a minute amount of heat-stable pressor substance,⁸ but the bulk of transported material remains unaltered during the period of ischemia. When the renal blood supply is restored, the pressor substance enters the general circulation and a rise of blood pressure takes place, presumably through its transformation into a heat-stable substance termed angiotonin⁹ or hypertensin.¹⁰

In this communication we wish to report confirmation in a clinical case of some of the aforementioned observations on experimental animals. A patient suffering from chronic rheumatic heart disease was observed to become hypertensive following complete occlusion of both main renal arteries, the blood pressure having been followed from normal to hypertensive levels. Renal perfusates prepared immediately after death revealed the presence of appreciable quantities of a pressor substance presumably similar to that which causes the hypertension following complete renal ischemia in animals.

REPORT OF CASE

History.—A woman aged 53 was admitted to the Cedars of Lebanon Hospital on Sept. 1, 1940. On the previous evening severe epigastric pain suddenly developed and she became faint. Within the next few minutes she became nauseated and dyspneic. Because of the persistence of these symptoms she was admitted to the hospital. She was known to have had rheumatic heart disease of many years' standing. Her blood pressure taken on several occasions before the present episode was found to be normal.

Examination.—On admission to the hospital the radial pulse was 120 a minute, with evidence of auricular fibrillation. There was no cardiac enlargement and the blood pressure was 110 systolic and 95 diastolic.

Course.—The day after admission her blood pressure was 130 systolic and 100 diastolic and she was given quinidine, which converted the auricular fibrillation to normal rhythm. On the tenth day the blood pressure was 170 systolic and 110 diastolic and on the twelfth day 200 and 120. The urinary secretion, which had been diminishing progressively, almost ceased. On the eighteenth day, the blood pressure was 190 systolic and 100 diastolic and the specific gravity of the urine

From the Cedars of Lebanon Hospital and the University of Southern California School of Medicine.

Endowed by grants from the Dazian Foundation for Medical Research and the Beaumont Trust Fund.

1. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: Studies on Experimental Hypertension; Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia, *J. Exper. Med.* **59**: 347-379 (March) 1934.

2. Goldblatt, Harry: Studies on Experimental Hypertension; Pathogenesis of Experimental Hypertension Due to Renal Ischemia, *Ann. Int. Med.* **11**: 69-103 (July) 1937.

3. Taquiní, A. C.: Liberación de substancia hipertensora en el riñón completamente isquemiado, *Rev. Soc. argent. de biol.* **14**: 422-428 (Oct.) 1938; Production of Pressor Substance by Totally Ischemic Kidney, *Am. Heart J.* **19**: 513-518 (May) 1940.

4. Lewis, H. A.; Leo, S. D., and Prinzmetal, Myron: The Effect of Reestablishment of Circulation in Completely Ischemic Kidneys upon the Blood Pressure of Cats, Dogs, and Rats, *Am. Heart J.* **21**: 319-325 (March) 1941.

5. Prinzmetal, Myron; Lewis, H. A.; Taggart, John; Wilkins, Howard, and Drury, D. R.: The Effect of Transplanted Ischemic Kidneys and of Temporary Complete Renal Ischemia upon the Blood Pressure of Rabbits, *Am. Heart J.* **20**: 525-538 (Nov.) 1940.

6. Leo, S. D.; Prinzmetal, Myron, and Lewis, H. A.: Observations upon the Pressor Substance Causing the Rise in Blood Pressure Following the Termination of Temporary, Complete Renal Ischemia, *Am. J. Physiol.* **131**: 18-26 (Nov.) 1940.

7. Prinzmetal, Myron; Lewis, H. A., and Leo, S. D.: Etiology of Hypertension Due to Complete Renal Ischemia, *Proc. Soc. Exper. Biol. & Med.* **43**: 696-699 (April) 1940; Etiology of Hypertension Due to Complete Renal Ischemia, *J. Exper. Med.* **72**: 763-776 (Dec.) 1940.

8. Page and Helmer.⁹ Braun Menendez, Fasciolo, Leloir and Munoz.¹⁰ 9. Page, I. H., and Helmer, O. M.: Crystalline Pressor Substance (Angiotonin) Resulting from Reaction Between Renin and Renin Activator, *J. Exper. Med.* **71**: 29-42 (Jan.) 1940.

10. Braun Menendez, E.; Fasciolo, J. C.; Leloir, L. F., and Munoz, J. M.: La substancia hipertensora de la sangre del riñón isquemiado, *Rev. Soc. argent. de biol.* **15**: 420-425 (Nov.) 1939.

had fallen to 1.008. Measurable quantities of albumin were present in the urine, and in the sediment there were numerous leukocytes, epithelial cells and a moderate number of erythrocytes but no casts. The nonprotein nitrogen rose to 72 mg. per hundred cubic centimeters on the seventh day after admission to 148 mg. on the day before death. There was increasing

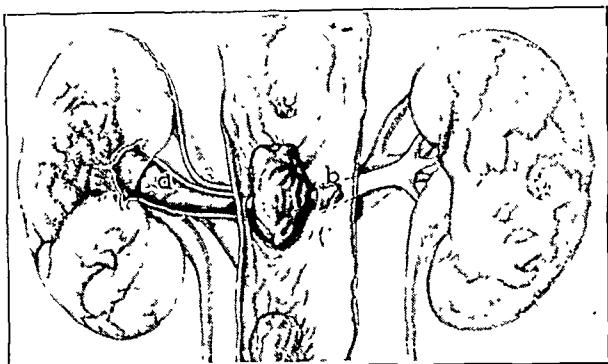


Fig. 2.—Artist's drawing showing complete thrombotic occlusion of right renal artery (a) and extension of thrombus into left renal artery (b). Note multiple infarcts of kidney. A portion of thrombus lower down in the aorta is shown.

stupor, and death occurred on September 21, three weeks after admission (fig. 1).

A clinical diagnosis of occlusion of both renal arteries was made. The most probable cause was considered to be embolism, although the possibility of a dissecting aneurysm of the aorta involving the orifices of both renal arteries was also considered.

Postmortem Examination.—Autopsy was performed within one hour after death. The heart weighed 275 Gm. All chambers except the left ventricle were dilated and there were no mural thrombi. Moderate fibrosis with stenosis of the mitral valve was present, as well as slight thickening of the aortic valve. The aorta showed severe atheromatous disease with ulceration of the intima. An irregular friable gray-brown thrombus 3.5 cm. in length incompletely obstructed the aorta at the level of the renal arteries. The entire length of the major right renal artery and the first portion of the left renal artery were occupied by similar thrombotic material (fig. 2). A separate inferior renal artery on the right side was patent except where it was obstructed at its orifice by thrombus. The intima of the aorta and renal arteries underlying the thrombi showed atheromatous changes similar to those found elsewhere. Another more recent thrombus overlay the mouth of the inferior mesenteric artery and partially saddled the bifurcation of the aorta.

The left kidney weighed about 175 Gm. The capsule was adherent and thickened. Except for the lower pole, which

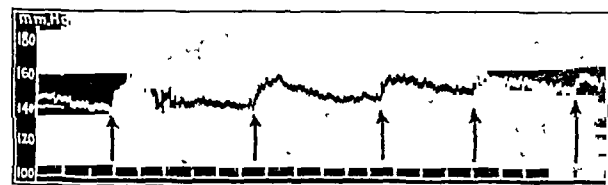


Fig. 3.—Effect of intravenous injection of perfusate from infarcted kidney on blood pressure of cat anesthetized with soluble pentobarbital. At the first arrow 2 cc. of perfusate was injected and at the second, third and fourth arrows the injections were 4 cc. Note diminishing pressor effect (tachyphylaxis). Time in minutes.

appeared fairly normal on gross examination the remainder of the kidney was mottled by numerous confluent zones of recent infarction.

The right kidney weighed 190 Gm. The renal artery was patent beyond the occlusion in its first portion and showed

only slight narrowing by intimal atherosclerotic change. The capsule was adherent and recent infarction involved almost the entire kidney, both cortex and medulla, except for an ill defined zone at the upper pole. A large tributary of the renal vein was obstructed by recent antemortem thrombus. The lower urinary tract was normal. The spleen weighed 200 Gm. and contained numerous infarcts.

Histologic Examination.—The renal arteries and aorta in the region of the major thrombus showed varying degrees of intimal atheromatous changes but no inflammatory lesions. The oldest portions of the thrombus were found in the medium size branches of the left renal artery within the kidney, where organization was well established. In the left renal artery the process appeared more recent than within the kidney but older than in the aorta and right renal artery. The renal parenchyma on both sides showed the typical changes of infarction. In the portions of both kidneys which were grossly spared, the histologic appearance varied from normal to intense hyperemia and tubular degeneration.

The anatomic diagnosis was chronic rheumatic disease of the mitral and aortic valves with mitral stenosis; occlusion by thrombus formation, probably embolic in origin, of the left renal artery with extension to the aorta and right renal artery; extensive bilateral renal infarction; multiple infarcts of the spleen; severe atherosclerosis of the aorta and coronary arteries, and thrombus near the bifurcation of the aorta.

DEMONSTRATION OF PRESSOR SUBSTANCE IN PERFUSATES OF PATIENT'S KIDNEY

Since the sequence of events in this case appeared to follow the pattern of experimentally induced hypertension, it was resolved to prove, if possible, whether the mechanism for the



Fig. 4.—Effect of experimentally prepared renal pressor substance on the blood pressure of a cat anesthetized with soluble pentobarbital. Note similarity to results shown in figure 3.

production of hypertension in man is the same as in experimental animals. Accordingly, when the patient was moribund, permission for autopsy was obtained and preparations were instituted for making and testing a perfusate of one of her kidneys as soon as possible following death. When it was apparent that the obstructing thrombus (with resultant infarction) extended only a short distance into the renal artery on the right side, this vessel was cannulated beyond the point of obstruction and the kidney removed for perfusion. The experiment was performed twenty minutes after death.

Procedure.—Fifty cc. of warm physiologic solution of sodium chloride was reperfused through the kidney five times. Twenty cc. of a bloody perfusate was obtained. This was tested by intravenous injection into a cat anesthetized with soluble pentobarbital, the blood pressure being recorded from the carotid artery in the usual manner.

Results.—Two cc. of perfusate had a prolonged pressor effect. The test animal was then given repeated injections of 4 cc. of the perfusate, with the result that rapidly decreasing pressor responses were obtained (fig. 3). Another cat was then given 5 mg. of cocaine, followed by another injection of the perfusate. There was no change in pressor response, proving that the pressor substance was not parahydroxyphenylethylamine.¹¹ The shape of the pressor curve and the duration of the pressor response were similar to those obtained by intravenously injected

11. Tainter, M. L., and Chang, D. K.: Antagonism of Pressor Action of Tyramine by Cocaine, 30: 193-207 (Jan.) 1927.

perfusate of completely ischemic kidneys of cats. Previous to this study we had tested perfusates from 4 fresh human kidneys, 2 of which were obtained immediately after death at autopsy and 2 following surgical removal. None of these perfusates which were prepared and tested in precisely the same manner as described exhibited a pressor effect.

COMMENT

The pressor substance found in perfusates of the ischemic kidney of the patient was similar to that present in perfusates of ischemic kidneys of animals because:

1. The pressor curves in the two were of similar configuration.
2. Both substances displayed the property of tachyphylaxis.
3. The pressor response was not altered by a previous injection of cocaine in either instance, excluding parahydroxyphenylethylamine as the cause for the hypertension.
4. Negative evidence is supplied by the fact that the pressor substance was not found in perfusates of nonischemic kidneys of either human beings or cats.

It will be recalled that when the patient was admitted to the hospital the blood pressure was normal and rose within the space of a few days to hypertensive levels and remained so until death. The postmortem examination not only confirmed the clinical impression of occlusion of both renal arteries but also excluded other possible causes for the sudden development of hypertension. It would appear, therefore, that this case furnishes a perfect example of hypertension following relatively acute renal ischemia in a human being. Since it has been proved that the pressor substance detected in perfusates of completely ischemic kidneys of cats is responsible for the postischemic hypertension in the Taquini experiments,⁷ the finding of the same pressor substance in perfusates of the patient's ischemic kidney strongly suggests that the mechanism responsible for the patient's hypertension was the same as that which obtains in the experimental animals. Whether or not this substance is responsible for other types of clinical hypertension remains for future studies to decide.

From the clinical point of view this case is also of interest because it serves as a reminder that renal infarction may be followed by hypertension. Statements are often made that hypertension does not occur under these circumstances; extremely few articles state that an elevation of blood pressure may follow renal infarction.¹²

SUMMARY

A patient suffering from chronic rheumatic heart disease became hypertensive within the space of a few days following an acute attack of severe abdominal pain. The elevation of blood pressure was accompanied by increasing suppression of urine short of complete anuria and by progressive nitrogen retention, and death occurred in uremia. At the postmortem examination there were found occlusion of both main renal arteries by thrombus formation, probably of embolic origin, and almost complete infarction of both kidneys. The train of events being identical with those occurring in the experimental production of hypertension, this case offers a perfect example in a human being of hypertension resulting from acute renal ischemia.

Perfusates that were prepared immediately after death from one of the infarcted kidneys revealed the presence of a pressor substance which is presumably the same as that responsible for the hypertension that follows the termination of complete renal ischemia in experiments on animals. Attention is called to hypertension as a neglected sign in occasional cases of renal infarction.

4833 Fountain Avenue.

12. Fishberg, Arthur M.: *Hypertension and Nephritis*, ed. 4, Philadelphia, Lea & Febiger, 1939, New York.

Special Article

FIFTH ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

DUE TO FIREWORKS AND EXPLOSIVES

SECOND SERIES

In 1937 the American Medical Association resumed its annual summaries of injuries resulting from the celebration of the Fourth of July with fireworks. This report for 1941 is the fifth of the reports in the series. The second series constitutes a resumption of similar summaries which were published from 1903 to 1916 and discontinued thereafter because of the reduction in the number of such accidents. Unfortunately the great increase in fireworks injuries again made this problem a matter of serious public importance.

DEATHS

Eleven deaths were reported in 1941 as directly due to the celebration of the Fourth of July with fireworks or other explosives. The distribution by states in comparison with the figures for recent years is given in table 1. For the first time since 1937 the decline

TABLE 1.—Deaths by State

State	1941	1940	1939	1938	1937
California.....	0	1	2	0	1
District of Columbia.....	0	1	0	0	0
Connecticut.....	0	0	0	1	0
Florida.....	0	0	1	0	1
Idaho.....	0	0	0	0	0
Illinois.....	3	0	1	1	0
Indiana.....	1	0	1	3	0
Iowa.....	0	1	0	0	0
Maine.....	0	2	0	0	0
Maryland.....	0	0	1	2	1
Massachusetts.....	1	0	2	0	2
Mississippi.....	0	0	0	1	0
Missouri.....	1	0	0	0	0
New Jersey.....	0	1	1	0	1
New Mexico.....	1	0	0	0	0
New York.....	0	1	3	2	3
Ohio.....	1	0	0	1	1
Pennsylvania.....	0	0	0	6	0
Rhode Island.....	0	0	0	0	1
Tennessee.....	2	0	0	0	0
Texas.....	0	0	1	0	1
Utah.....	0	0	0	0	2
West Virginia.....	0	0	0	1	0
Wisconsin.....	1	0	0	0	0
Wyoming.....	0	1	0	0	0
Totals.....	11	8	13	18	20

TABLE 2.—Total Injuries by Type

Injuries	1941	1940	1939	1938	1937
Burns and lacerations.....	1,818	4,140	5,305	7,458	6,858
Loss of vision of one or both eyes.....	9	15	10	43	16
Injury to eye.....	104	199	158	281	294
Loss of finger, hand or other member.....	17	38	41	60	37
Internal injury, fracture or other serious accident.....	91	70	37	71	*
	2,039	4,462	5,560	7,913	7,905

* Not classified.

in total number of deaths has been reversed. Eleven deaths were recorded in 1941 as compared with eight in 1940. It is also noteworthy that for the first time none of the fatalities were due to burns resulting from the igniting of clothing from fireworks. Three deaths occurred in Chicago, one from burns due to explosion of firecrackers, one in a small girl of 4 who bit into a torpedo and sustained extensive lacerations of the

face, and the third in a visitor from Iowa who received a bullet wound from a gun used in noise making activities. Two boys in Memphis, Tenn., died as the result of injuries sustained when another boy tossed a lighted firecracker into the counter of fireworks in

vision in one or both eyes and 104 sustained eye injuries. Nevertheless, as shown in table 2, there has been a decline in the total number of serious injuries.

INJURIES

Table 3 totalizes the injuries from firecrackers and other explosives in 1941 and in parallel columns the injuries recorded for the preceding four years. As has been pointed out in previous reports, these figures do not take into account hospitals which failed to report their accidents or injuries treated in physicians' offices. The totals, therefore, must be considered conservative and if all injuries were recorded the numbers would doubtless be considerably higher. The most striking figures in the report are those relating to New York State, where the injuries declined from over 1,100 in 1940 to 105 in 1941. This change unquestionably can be attributed to the state legislation, which first became effective on the Fourth of July of 1941. This year Ohio has the unenviable distinction of leading all states in the number of injuries, in spite of the fact that the total represents some decrease from previous years. Ohio is followed closely by California, Massachusetts and Illinois, in that order, all with bad records. Ohio passed an antifireworks bill to take effect August 1, 1941, which therefore was without value for this year. California has a limited law which was obviously not satisfactorily effective. In Massachusetts the antifireworks legislation was defeated. The large number of injuries in that state therefore can be directly attributed to failure to adopt legislation which was obviously

TABLE 3.—Injuries, by Type, Caused by the Celebration of the Fourth of July with Fireworks and Other Explosives

	1941						Total Injuries, 1940	Total Injuries, 1939	Total Injuries, 1938	Total Injuries, 1937
	Burns and Lacerations	Loss of Vision of One or Both Eyes	Injury to Eye	Loss of Finger, Hand or Other Member	Internal Injury, Fracture or Other Serious Accident	Total Injuries				
Alabama.....	2	0	0	0	0	2	25	17	15	7
Arizona.....	1	0	0	0	0	1	12	30	16	32
Arkansas.....	1	0	1	0	0	2	3	3	7	7
California.....	200	2	8	1	20	231	251	650	509	485
Colorado.....	12	0	0	0	0	12	12	10	21	119
Connecticut.....	73	0	3	1	4	81	48	201	125	104
Dist. Columbia..	63	0	5	0	0	68	57	31	78	78
Delaware.....	0	0	0	0	0	0	0	22	39	25
Florida.....	31	0	0	0	2	33	15	63	29	23
Georgia.....	1	0	0	0	0	1	6	5	7	9
Idaho.....	4	0	0	0	0	4	7	7	5	52
Illinois.....	187	0	9	0	13	209	400	453	513	485
Indiana.....	1	0	0	0	0	1	12	198	346	278
Iowa.....	5	0	0	0	0	5	7	6	6	76
Kansas.....	57	1	2	0	1	61	147	61	74	93
Kentucky.....	0	0	1	1	0	2	13	6	11	61
Louisiana.....	1	0	1	1	0	3	4	12	2	12
Maine.....	36	0	2	1	0	39	46	59	75	67
Maryland.....	7	0	0	0	0	7	211	169	110	123
Massachusetts.....	188	1	9	4	11	213	314	333	467	376
Michigan.....	31	0	6	1	4	42	83	126	107	190
Minnesota.....	36	0	3	0	3	42	165	152	143	89
Mississippi.....	0	0	0	0	0	0	2	0	1	0
Missouri.....	80	0	4	0	2	86	155	357	571	510
Montana.....	14	0	0	0	1	15	23	38	30	50
Nebraska.....	2	2	0	0	1	5	30	17	14	49
Nevada.....	0	0	0	0	0	0	1	0	1	0
New Hampshire.....	23	0	2	1	2	28	36	25	32	40
New Jersey.....	31	0	2	1	1	35	158	112	88	72
New Mexico.....	4	0	0	0	0	4	3	5	5	1
New York.....	99	0	2	0	4	105	1,114	1,491	1,630	1,371
North Carolina.....	3	1	0	1	0	5	8	2	2	4
North Dakota.....	3	0	2	0	0	5	5	2	8	14
Ohio.....	260	0	13	0	3	276	461	337	585	553
Oklahoma.....	8	0	2	0	0	10	49	32	43	101
Oregon.....	16	0	3	0	1	20	47	27	29	45
Pennsylvania.....	60	0	4	0	3	67	55	89	1,702	901
Rhode Island.....	132	0	5	1	3	141	239	181	210	351
South Carolina.....	4	0	0	0	0	4	0	2	3	0
South Dakota.....	14	1	1	0	1	17	21	14	8	9
Tennessee.....	0	0	0	0	0	0	6	9	1	3
Texas.....	40	0	3	0	1	44	42	31	69	33
Utah.....	5	0	1	0	0	6	1	5	18	31
Vermont.....	3	0	1	0	0	4	6	1	2	20
Virginia.....	16	1	0	0	1	18	11	6	13	18
Washington.....	27	0	4	1	6	38	32	66	70	153
West Virginia.....	3	0	0	1	0	4	4	0	41	28
Wisconsin.....	29	0	4	1	1	35	57	66	117	92
Wyoming.....	5	0	1	0	0	6	6	2	6	10
Unknown.....	0	0	0	0	0	0	16	0	0	37
	1,818	9	104	17	91	2,039	4,462	5,560	7,933	7,295

TABLE 4.—Injuries in Principal Cities

	1941*		1940		1939		1938		1937	
	Injuries	Rate per 100,000	Injuries	Rate per 100,000	Injuries	Rate per 100,000	Injuries	Rate per 100,000	Injuries	Rate per 100,000
Pawtucket, R. I.	25	33.3	..	..	..	..	..	..	..	..
Providence, R. I.	78	31.0	..	..	..	..	..	..	..	..
Youngstown, Ohio	48	28.7	..	..	..	..	..	..	..	..
Hartford, Conn.	46	27.7	..	..	..	..	..	..	..	..
Washington, D. C.	70	10.6	68	14.0	57	11.7	..	..	..	..
Boston.....	74	9.6	76	9.7	71	9.0	..	..	..	..
Los Angeles.....	132	8.8	124	10.0	253	20.9	180	14.6	45	3.6
Kansas City, Mo.	30	7.5	53	13.8	243	60.8	..	..	..	..
Cincinnati.....	26	5.7	62	13.7	31	6.9	..	..	..	..
Cleveland.....	47	5.4	64	7.1	42	4.7	129	14.3	64	7.1
Chicago.....	146	4.3	253	7.5	226	6.7	176	5.2	225	6.7
St. Louis.....	35	4.3	..	..	..	..	295	35.9	322	39.2

* Rate per hundred thousand based on 1940 census; rates for previous years based on 1930 census

TABLE 5.—Cap Pistol Injuries

State	1941		
	Burns and Lacerations	Serious Injuries	Total
California.....	1	0	1
Maine.....	1	0	1
..	1	0	1
..	2	1	3
..	0	1	1
Pennsylvania..	3	1	4
	8	3	11

indicated by experience of previous years. A bill to control fireworks will become effective in Illinois on Jan. 1, 1942.

However, the state with the worst record as judged by the relation between the number of injuries and the size of the population is Rhode Island. The states with the largest percentage of increase in injuries from 1940 to 1941 are Connecticut from 48 to 81, South

a shed from which the boys were selling. The other deaths resulted from a variety of accidents, including the premature explosion of a bomb in a fireworks display, a misdirected aerial bomb in another fireworks display, a gunshot wound, and an explosion which resulted while a bomb was being mixed.

TETANUS

There were 2 cases of tetanus in both 1937 and 1938. In 1939 none were reported and in 1940 there were 2. In 1941 1 case of tetanus was reported from Massachusetts. In this case clinical symptoms of tetanus began eight days after a firecracker wound on the leg. Despite antitoxin administration as soon as diagnosis was made, the patient died.

SERIOUS INJURIES

Hospital questionnaires and newspaper clippings again record numerous serious and unusual injuries resulting from firecrackers. Nine persons lost the

Carolina from 0 to 4, Utah from 1 to 6 and Virginia from 11 to 18. Of these, apparently Utah is the only state with a satisfactory law on the books. Delaware is the only state which has had a perfect record of no injuries for the last two years. However, in 1941 Mississippi and Nevada did not record any fireworks accidents. Curiously, Tennessee recorded two deaths but no other fireworks injuries.

A striking improvement has occurred between 1940 and 1941 in Alabama, Arizona, Kansas, Kentucky, Maine, Nebraska, New Jersey and Oklahoma. Alabama, of course, as a Southern state, would be expected to have few fireworks accidents on the Fourth. The improvement in Arizona is probably due to the adoption of a control bill effective in 1941. The explanation for Kansas is unknown; Kentucky has a regulatory law. The excellent results obtained in Maryland are doubtless due to the adoption of a new law this year. No ready explanation for the improvement in Maine is available. Nebraska has had a law since 1937. New Jersey was one of the first states to adopt adequate legislation but showed from 1937 to 1940 a steady although slight rise in number of accidents, presumably due to laxity in enforcement. This year the trend has been strikingly reversed, and New Jersey shows the lowest number of injuries ever recorded for that state, this result being attributed in press releases to an embargo placed on all shipments of fireworks into the state and to the effectiveness with which the new law in New York was enforced. It is particularly noteworthy that Indiana, which had one of the worst records of any state up until the application of its antifireworks law in 1940, has for the last two years reported only three such accidents. Obviously, the states which need adequate state laws and enforcement most are Ohio, Massachusetts, Illinois and California. Of these Ohio and Illinois have laws which are to become effective for the Fourth of July 1942; it will be interesting to see how effective their enforcement will be. The record of Massachusetts with defeat of a satisfactory bill would imply an extraordinary lack of interest in the lives and limbs of its citizens.

Washington, D. C., leads the large cities in 1941 in the proportion of injuries per hundred thousand of population, displacing Baltimore, which, as a result of finally enacted and enforced legislation, no longer appears on the list of large cities with bad records. In table 4 appears a tabulation of the cities with the highest rates of injuries. It should be noted that four cities of intermediate size, two of them in Rhode Island, lead all the larger cities in rate of injuries per hundred thousand of population. It is noteworthy also that more than half of all the injuries which were reported in Connecticut occurred in one of its cities, Hartford.

This year hospitals were specifically instructed to list injuries from cap pistols separately, and these are given in table 5. Although this question was asked in 1940, comparable 1940 figures are not given since, because of the different method of collection, they presumably included some injuries from blank cartridges, guns and firecrackers. It is curious to note that, in spite of the small number of injuries, three were serious, in one case resulting in hospitalization for twenty-three days and in another for forty-two days. On close examination the majority of the injuries appeared to be due to the caps themselves rather than the normal use of the cap pistol.

COMMENT

As has been pointed out repeatedly in these reports, the reduction of fireworks injuries is dependent not only on adequate state legislation but on enforcement as well. In 1940 the state which demonstrated these points most dramatically was Indiana; this year Maryland and New York showed an enormous reduction in injuries. With the exception of most of the Southern states, which do not celebrate the Fourth of July with fireworks as pointed out recently in a letter from Mr. Bugbee, director of the National Fire Protection Association published in *THE JOURNAL*, there are few exceptions to the rule that only those states which have enacted and enforced statewide laws have shown evidence of satisfactory control. It is however a source of satisfaction that, in the five years since these reviews have been resumed, the total number of unnecessary accidents of this nature have declined from 7,205 in 1937 to 2,039 in 1941. This source of death and disfigurement can be still further reduced, especially by prompt enactment and enforcement of suitable legislation in those states, such as Massachusetts and Rhode Island, which do not have effective laws. Ohio and Illinois, if adequate enforcement is attained next year, should show considerable improvement. In view of the experience of the last two years the California legislation should receive prompt attention with a view to making it serve the purposes for which it was presumably intended.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

ALLERGY ELECTRIC MASK NOT ACCEPTABLE

Manufacturer: Allergy Research Institute, Inc., P. O. Box 1399, Cincinnati.

The Allergy Electric Mask, a beak-shaped mask covering the nose and mouth, is claimed in the firm's advertising to be "An Advanced Scientific Treatment for Hay Fever—Rose Fever—Seasonal Asthma." It is said that the device ". . . will filter and purify the air inhaled by the wearer . . . 99.46% OF THE POLLENS AND MOLDS ARE REMOVED FROM THE AIR WITH THE ALLERGY ELECTRIC MASK." The perforated metal front rests on a rubber base which is fashioned to fit against the contour of the face; head straps hold the device in place.

In operation a mechanical method and an alleged electrical method of filtration are employed. The electric filter consists of two molded fine mesh metal screens, one attached to the negative and the other to the positive pole of a 1½ volt battery. The mechanical filter pad, a cellulose-sheet type filter, is placed between the two metal screens. Following is an excerpt from the firm's advertising:

The ALLERGY ELECTRIC MASK causes the air to flow through a circuit containing a positive-charged screen and a negative-charged screen. Those pollens having a positive electrical charge are repelled by the positive-charged screen, while pollens having a negative electrical charge are repelled by the negative-charged screen. (A pollen attracted to an opposite-charged screen immediately loses its own charge and assumes the same charge as that of the screen, and is then repelled.)

The Mask utilizes the electrical method of filtration to greatest advantage, because it contains a small battery which produces a complete electrical circuit about the filter pad. The positive pole of the battery, connected to a metal screen, gives this screen a positive charge. The negative pole of the battery, connected to the other screen, gives this other screen a negative charge. The filter pad lies between the two screens. As the air flows through the Mask, the harmful particles are removed by both mechanical and electrical methods of filtration.

The Council's investigation of the device brought forth the following results:

A series of exposures was made while the mask was worn by a patient for periods of a few hours each over a period of fifteen days. A petrolatum covered glass cover slip was placed both on the outside and on the inside of the mask and the number of pollens on the same area (usually 1.8 sq. cm.) were compared. The following results were obtained:

With Battery	Exterior	Interior
8/27	3	0
8/29	4	0
8/30	1	0
8/31	0	0
3/31	0	1
9/2	1	0
9/4	16	48
9/4	17	54
9/5	6	7
9/6	3	7
Without Battery	Exterior	Interior
9/7	18	11
9/8	15	17
9/9	1	2
9/10	0	1

In another experiment pollen was dispersed in a room by means of a fan and the mask with a cover slip on the outside, and one on the inside was worn by the experimenter for a period of thirty to sixty minutes. Pollen counts were then made as before, with the following results:

With Battery	Exterior	Interior
Experiment 1	58	82
Without Battery	Exterior	Interior
Experiment 2	142	121
Experiment 3	76	92

It is apparent not only that the filtering efficiency of the mask is poor but that the battery adds no advantage.

The Council voted not to include the Allergy Mask on its list of accepted devices because the claims made by the firm for the instrument were not substantiated by the Council's tests.

HAYRIN NASAL FILTER NOT ACCEPTABLE

Manufacturer: Allergy Research Institute, Inc., P. O. Box 1399, Cincinnati.

The Hayrin Nasal Filter is advertised as "A scientifically Designed and Specially Constructed (Invisible) Nasal Filter Which Will Aid in the Relief of Hay Fever, Rose Fever and Seasonal Asthma. . . ." It is manufactured and distributed by the firm manufacturing the Allergy Electric Mask and promotional matter from the firm states "The Allergy Electric Mask and the completely invisible Hayrin Nasal Filter make an ideal combination. The mask can be worn when sleeping, while driving, and when about the home; and the Filter can be worn at work, play and at social engagements."

Although the device was not submitted to the Council for consideration by the firm, the many inquiries coming to the office of the Council concerning the device made advisable the preparation of a report. The nasal filter was purchased and examined by the Council.

In the firm's promotional literature the device is claimed to "give an effect similar to carrying an air conditioning unit with you." The outfit consists of two silver frames into which are to be placed the filter pads. The frames are adjustable to varying sizes of nasal chambers. These filters are to be placed in the nose to filter out pollen, molds and other dust particles.

Many misleading statements and unjustifiable claims are made in the advertising and in the correspondence to a prospective purchaser. The filtering device is uncomfortable when fitted in the nose. Dry pollen placed on the filter pad did not go through the mesh. However, when such a pad is moistened with secretions it acts not only as an obstacle to pollen but also as an obstruction to the free entrance of air. Although the filter may stop pollen from entering the nose, it cannot prevent the entrance of pollen through the mouth and eyes. While such filters have in some instances improved the nasal symptoms they have not prevented, indeed have even favored, the occurrence of asthma.

The Council voted not to include the Hayrin Nasal Filter on its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M.D., Secretary.

LIVER PURIFIED SOLUTION-DRUG PRODUCTS CO., INC.—A sterile aqueous, clear, dark brown solution containing all of the fraction G of the liver extract (Cohn), preserved with 0.5 per cent of carbolic acid (phenol). The daily parenteral administration of 0.1 cc. has been found to produce the standard reticulocyte response defined as 1 U. S. P. unit (injectable) when assayed in cases of pernicious anemia as required by the Council.

Actions and Uses.—Liver purified solution-Drug Products Co., Inc., is recommended for intramuscular use in the treatment of pernicious anemia. See the general article Liver and Stomach Preparations (New and Nonofficial Remedies, 1941, p. 328).

Dosage.—For the average case in relapse, 10 U. S. P. injectable units (1 cc.) may be injected as the initial dose. Subsequent doses from 5 to 10 U. S. P. injectable units (0.5 to 1.0 cc.) may be given weekly until the blood picture has returned to normal. The maintenance dose should be not less than 1 U. S. P. injectable unit (0.1 cc.) daily and should be adjusted to the needs of the individual patient depending on the degree of complications. It may be administered at weekly or longer intervals in equivalent cumulative doses.

Distributed by Drug Products Co., Inc., Long Island City, N. Y.
Hyposols Liver Purified Solution-Drug Products Co., Inc., 1 cc. (10 U. S. P. injectable units per cubic centimeter).
Vials Liver Purified Solution-Drug Products Co., Inc., 10 cc. (10 U. S. P. injectable units per cubic centimeter.)

Liver purified solution-Drug Products Co., Inc., 10 units per cubic centimeter, is prepared as follows: Fresh edible liver is extracted with water at 170 F. for thirty minutes and filtered. The filtrate is concentrated in vacuo and extracted with 70 per cent alcohol; the alcoholic extracts are concentrated in vacuo and precipitated with ammonium sulfate. The precipitate is further purified by alcoholic fractionation, the alcohol removed and the extract made up to volume so that each cubic centimeter contains the extract from 100 Gm. of fresh liver. Fifteen per cent phenol is used as a preservative.

SOLUTION OF POSTERIOR PITUITARY (See New and Nonofficial Remedies, 1941, p. 395).

PITUITARY SOLUTION-U. S. P. (LAKESIDE).—A brand of solution of posterior pituitary-U. S. P.

Manufactured by Lakeside Laboratories, Inc., Milwaukee.
Ampul Pituitary Solution-U. S. P., 0.5 cc. (Lakeside).
Ampul Pituitary Solution-U. S. P., 1 cc. (Lakeside).
Vials Pituitary Solution-U. S. P., 10 cc. (Lakeside).
Vials Pituitary Solution-U. S. P., 30 cc. (Lakeside).

ALUMINUM HYDROXIDE GEL (See THE JOURNAL, Nov. 1, 1941, p. 1539).

Aluminum Hydroxide Gel-Schiffelin.—A brand of aluminum hydroxide gel-N. N. R. The preparation contains 5.5 per cent aluminum hydroxide (equivalent to 3.3 per cent aluminum oxide). Saccharin and Oil of Peppermint U. S. P. are added as flavoring agents. Marketed in bottles of 1 pint and 1 gallon.

Manufactured by Schiffelin & Co., New York. No U. S. patent or trademark.

MERCURIC SALICYLATE (See New and Nonofficial Remedies, 1941, p. 349).

Cheplin Biological Laboratories, Inc., Syracuse, N. Y.

Bottles Mercuric Salicylate, 1 grain (0.065 Gm.) Suspended in Oil, 60 cc. Each cubic centimeter contains mercuric salicylate 1 grain (0.065 Gm.), quinine and urea hydrochloride 0.005 Gm., wool fat 0.1 Gm., double distilled water 0.05 cc. and Wesson oil (corn oil) to make 1 cc.

NICOTINIC ACID (See New and Nonofficial Remedies, 1941, p. 555).

The following dosage forms have been accepted:

Tablets Nicotinic Acid, 20 mg., 100 mg.

Prepared by George A. Breon & Company, Inc., Kansas City, Mo.

SULFANILAMIDE (See New and Nonofficial Remedies, 1941, p. 506).

The following dosage forms have been accepted:

Tablets Sulfanilamide, 2½ grains, 5 grains, 7½ grains.

Prepared by McNeil Laboratories, Inc., Philadelphia.

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SATURDAY, JANUARY 3, 1942

A CALL TO THE MEDICAL PROFESSION

Last week The Journal published an enrolment form for the Procurement and Assignment Service for Physicians. Already many physicians have sent this blank directly to the headquarters of the Procurement and Assignment Service in Washington. On the opposite page appears another copy of the enrolment form. EVERY PHYSICIAN IN THE UNITED STATES WHO HAS NOT YET SENT THIS FORM TO THE EXECUTIVE OFFICER IN WASHINGTON SHOULD DO SO AT ONCE.

The only way in which the Procurement and Assignment Service can function to supply the Army, Navy and Public Health Agencies with the necessary personnel and to make sure that civilian and industrial needs are suitably cared for is to have the complete cooperation of the medical profession. FILL OUT THE BLANK ON THE OPPOSITE PAGE, TEAR IT OUT OF THE JOURNAL AND SEND IT AT ONCE TO DR. SAM F. SEELEY, EXECUTIVE OFFICER OF THE PROCUREMENT AND ASSIGNMENT SERVICE.

If you have already sent in the blank published last week, make certain that some other physician who may not have received a blank does the same. Ask your professional colleagues whether or not they have enrolled. If they have not yet enrolled, tell them to send in the blank which is made available through The Journal of the American Medical Association or through a state medical journal and offer them the extra blank published in this week's issue if they do not have one available.

MECHANISM OF ANTIPNEUMOCOCCUS SERUM THERAPY

Studies of the cytologic mechanism of spontaneous recovery from experimental pneumococcal pneumonia in rats and modification of this mechanism under the influence of type specific antiserum are currently reported by Wood¹ of the department of bacteriology and immunology at the Harvard Medical School. Since experimental pneumococcal pneumonia in rats closely simulates human lobar pneumonia, the results of the investigation are presumably applicable to clinical medicine. Previous studies of clinical and experimental pneumococcal pneumonia have led to numerous contradictions and inconsistencies. Fully encapsulated living pneumococci are recognized to be resistant to attack by phagocytic cells unless previously sensitized with specific antibodies.² Nevertheless, investigators have shown that complete recovery may occur both in man and in laboratory animals long before specific antibodies can be demonstrated in the circulation.³ Well supported laboratory and clinical evidence indicates that intravenous injection of specific antiserum often brings about a rapid recovery, yet much evidence has been advanced that specific antibodies cannot penetrate the pneumonic lung.⁴ To complicate matters, quantitative data indicate that, were antibodies able to enter the pulmonary alveoli, they could not accumulate in sufficient amounts to neutralize the antiphagocytic type specific polysaccharide there present. Nye and Harris,⁵ for example, estimate that at least 60 liters of the highly potent type I antiserum would be necessary to precipitate completely the inhibiting pneumococcus carbohydrate. Drugs of the sulfapyridine group are not bactericidal in concentrations usually employed in clinical medicine; nevertheless, following treatment with sulfapyridine, patients often recover without the aid of circulatory antibodies.⁶

In order to settle these and other controversial questions, Wood made a detailed microscopic study of the evolution of experimental pneumococcal pneumonia in rats. By means of an adaptation of the technic of Jourdonais and Nungester⁷ the rats were inoculated by intrabronchial injection of 0.1 cc. of 6 per cent mucin containing from 4,000 to 7,000 highly virulent type I pneumococci. To insure alveolar penetration of the inoculum, the rats were hung in a vertical position by the upper incisor teeth for thirty minutes while still under light ether anesthesia.

The pneumococcal pneumonia produced by this technic is uniformly fatal. All 40 untreated control rats

- 1 Wood, W. B., Jr. *J. Exper. Med.* **73**: 201 (Feb.) 1941
- 2 Robertson, O. H., and Van Sant, Helen. *J. Immunol.* **37**: 571 (Dec.) 1939
- 3 Ford, F. T., and Persons, E. L. *J. Exper. Med.* **53**: 151 (Feb.) 1931
- 4 Kline, B. S., and Winternitz, M. C. *J. Exper. Med.* **21**: 311, 1915
- 5 Fox, J. P. *J. Immunol.* **31**: 7 (July) 1936
- 6 Nye, R. N., and Harris, A. H. *Am. J. Path.* **13**: 749 (Sept.) 1937
- 7 Wood, W. B., Jr., and Long, P. H. *Ann. Int. Med.* **13**: 612 (Oct.) 1939
- 8 Jourdonais, L. F., and Nungester, W. J. *Science* **81**: 74 (Jan. 18) 1935

ENROLMENT FORM FOR PROCUREMENT AND
ASSIGNMENT SERVICE FOR PHYSICIANS

Dr. Sam F. Seeley, Executive Officer
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Dear Doctor Seeley:

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11. Have you previously applied for entry into the Army or Navy Medical Service? If so, state when, where and with what result (if rejected, state why).

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Fill out this blank, tear out and send to Dr. Sam F. Seeley at the above address.

succumbed to the disease in less than five days, the majority dying in about forty-eight hours. Necropsies showed consolidation of the lobar type, usually with an accompanying pleurisy, pericarditis and bacteremia.

To study the evolution of the pulmonary lesion, groups of 5 untreated rats were killed at the end of twenty minutes, two hours, six hours, twelve hours, eighteen hours, twenty-four hours and thirty-six hours after inoculation. Their inflated lungs were fixed *in situ*. A composite picture of all groups showed a small circumscribed area of consolidation in the injected pulmonary lobe at the end of two hours, increasing to an involvement of the entire lobe by the end of thirty-six hours. Three definite histologic zones could be recognized in this spreading lesion: First there was an advancing outer zone characterized by the presence of edema fluid in the alveoli. This edema fluid contained few if any leukocytes but did contain innumerable pneumococci, which apparently multiplied freely in this favorable medium. Outward mechanical flow of this infected edema fluid was apparently the main mechanism of spread of the pulmonary lesion.

Inside this peripheral zone there was a second zone in which the alveoli contained both leukocytes and micro-organisms. In the outer portion of this intermediate zone, where the leukocytes were relatively few, pneumococci were numerous. In the inner portion the leukocytes dominated and bacteria were scarce. Phagocytosis of the pneumococci by polymorphonuclear leukocytes was a conspicuous feature of this portion, even though specific opsonins were not demonstrable at this stage. Finally there was an inner zone of advanced consolidation characterized by the complete absence of organisms, the alveoli being packed with leukocytes and fibrin deposits being occasionally observed. In the older parts of the consolidated area, macrophagic resolution had already begun.

The histopathology of the forty-eight hour lungs was essentially the same, except that by this time the lesion had usually extended to adjacent lobes. In all stages the essential site of the spreading infection was in the outer edema zone, with complete or practically complete leukocytic sterilization in the consolidated areas. To explain this phagocytosis it must be assumed either that specific opsonins are formed locally in the infected tissues⁸ or that there are unknown local hormonal or enzymic factors making possible adequate phagocytosis in the absence of specific opsonins.

Turning now to a study of the therapeutic effects of specific antiserum, Wood treated groups of infected rats with homologous type-specific antipneumococcus serum. Deaths did not occur among the 76 rats treated within

eighteen hours after intrabronchial inoculation. Conditions in animals killed from four to seven days later indicated in each case that the pneumococcal infection had completely subsided. To determine the mechanism of this therapeutic recovery, groups of treated animals were killed at various times after treatment. Within six hours after peripheral injection of the antiserum the spreading lesion was arrested, the outward margin becoming sharply demarcated. Within one hour after injection of the antiserum the pneumococci of the edema zone could be seen to be agglutinated and firmly adherent to the alveolar walls. By the end of six hours, practically all of the extracellular organisms of this zone had congregated into large immobilized clumps. This included pneumococci in large bronchi as well as within the alveoli. The clumped cocci often showed capsular swelling. Accelerated phagocytosis was noted in all cases. The essential mechanism of the therapeutic arrest is therefore apparently agglutination and immobilization of the pneumococci by alveolar adhesion, presumably due to specific epithelial opsonins analogous to the "endothelial opsonins" of earlier investigators.⁹ This peripheral immobilization apparently allows the micro-organism to be overtaken and destroyed by the advancing leukocytes. Within forty-two hours practically all pneumococci had been engulfed and completely digested by the phagocytic cells.

In contrast to this favorable action, Wood found that, if the administration of specific antiserum was delayed more than twenty-four hours after intrabronchial inoculation, nearly half of the treated animals died within eighteen hours, some of them even during the course of the serum injection. A definite explanation of this therapeutic shock is not suggested, though the animals evidently died of an anaphylactic-like reaction. Each rat showed evidence of pulmonary edema at the time of death, frothy hemorrhagic fluid exuding from the nostrils.

It has been suggested¹⁰ that, owing to its relatively small molecular diameter, rabbit antibody would presumably penetrate lung tissues more readily than horse serum. Wood found antipneumococcus horse serum equally effective with rabbit antiserum. Microscopic examination of type I pneumococcal lungs treated with type II antisera showed that heterologous antibody is without demonstrable therapeutic effect. Preliminary experiments have already shown that sulfapyridine causes a similar peripheral immobilization of pneumococci, though the mechanism of this immobilization is apparently different from that with specific antiserum. Further studies of this chemotherapeutic peripheral immobilization are now in progress in the Harvard laboratories.

8. Robertson, O. H.: Recent Studies on Experimental Lobar Pneumonia: Pathogenesis, Recovery and Immunity, *J. A. M. A.* **111**: 1932 (Oct. 15) 1938.

9. Manwaring, W. H., and Coe, H. C.: *J. Immunol.* **1**: 401, 1916.
10. Horsfall, F. L., Jr.; Goodner, Kenneth; MacLeod, C. M., and Harris, A. H., 2d: Antipneumococcus Rabbit Serum as Therapeutic Agent in Lobar Pneumonia, *J. A. M. A.* **108**: 1483 (May 1) 1937.

Current Comment

OPPORTUNITIES FOR PHYSICIANS

Much has been said about the rapid advance of medical science and the relatively slower march of medical practice—the lag between the acquisition of knowledge and its utilization. In order to shorten the time required for dissemination throughout the profession of information concerning the practical application of the newest discoveries and the latest improvements in the technic of diagnosis and treatment, a network of continuation courses for practicing physicians has been established under the auspices of medical societies, health departments, medical schools, hospitals and other agencies. Varying widely in methods employed, time involved and geographic distribution, these courses are designed to increase the knowledge and skill of those responsible for the care of the sick. For those who would avail themselves of these opportunities, the Council on Medical Education and Hospitals has compiled and publishes in this issue of THE JOURNAL a classified list of courses of five days' duration or longer which will be offered during the next three months. The number and the scope of these offerings present substantial evidence that the medical profession is alive to its responsibilities.

DETECTION OF EARLY OCULAR CHANGES IN AVITAMINOSIS A

Assessment of the nutritional status of human beings has long been a subject of study; particularly, in recent years, new methods and technics have been devised and older ones improved to provide more accurate means of evaluation. Early recognition of impairment due to dietary deficiencies is important. Kruse¹ recommends a biomicroscopic ocular examination as a simple and objective method for the detection of xerosis conjunctivae, an early sign of vitamin A deficiency. An application of this type of study to a hundred and fifty adults from a low income group showed that in 45 per cent of the subjects ocular manifestations in the form of characteristic elevated conjunctival spots, which are a feature of advanced xerosis conjunctivae, could be detected by gross examination. Another 54 per cent had microscopic ocular lesions characteristic of avitaminosis A. Vitamin A therapy effected complete disappearance of the conjunctival lesions in some of the patients; in all others who were still receiving vitamin A at the time of the report the lesions had receded to the point of near disappearance. Months of therapy, however, were required to effect complete recovery. As interpreted by Kruse, the results of this limited survey revealed an unusually high prevalence of avitaminosis A in a low income group. The question arises concerning the relative value of this examination as compared with

others depending on a measurement of dark adaptation.² Fortunately, a study on the correlation of conjunctival lesions with dark adaptation has been carried out, and a report of this work is forthcoming. Pertinent is the suggestion of Kruse that xerosis probably precedes night blindness as an early sign of avitaminosis A. Further research will undoubtedly elucidate this important point and will contribute to the broader problem of the early detection of avitaminosis A.

MERCURIALISM IN THE FELT HAT INDUSTRY

A solution containing mercury has long been used to treat fur in order to make it amenable to felting. In this "carroting" process part of the metal enters into chemical combination with the fur, from which it then gradually volatilizes into the air as elemental mercury. A serious health hazard is thus created. A recent survey by the U. S. Public Health Service revealed that over 10 per cent of a group of several hundred hatters examined were suffering from chronic mercurialism, a syndrome which is characterized by fine intention tremor, psychic irritability of an exaggerated degree, exaggerated tendon reflexes, pallor, and certain abnormalities of the mouth, among other symptoms.¹ A serious effort has been made to eliminate the use of mercury in the treatment of fur by the development of mercury free agents. Of interest in this connection is a report by Beal, McGregor and Harvey² in which is described the theoretical and the practical work culminating in the successful use of nonmercurial carroting materials. From the end of 1936 to September 1941 some 2,000,000 pounds of fur was caroted with these agents and in 1941 alone it may be estimated that 1,500,000 pounds was thus treated. Owing to the introduction of carrots free from mercury, it seems possible that mercurialism may in the future be entirely banished from the felt hat industry. This development has been greatly assisted by the industry itself. Investigations which have resulted in the development of nonmercurial carroting agents were promoted by the industry through the establishment of a fellowship at the Mellon Institute—an excellent illustration of how planned research may help to eliminate industrial health hazards. While we can look forward to the day when the felt hat industry is no longer plagued with occupational disease, the danger is present wherever mercury is handled. In any case, however, the mercury hazard can be minimized by following the suggestions of the bureau of public health, which recommends the segregation of sources of volatile mercury and ventilation so arranged as to minimize exposure of workers to mercury vapor.¹

2. Dark Adaptation and Vitamin A, Current Comment, J. A. M. A. 117: 370 (Aug. 2) 1941.

1. Neal, P. A.; Flinn, R. H.; Edwards, T. I.; Reinhart, W. H.; Hough, J. W.; Dalla Valle, J. M.; Goldman, F. H.; Armstrong, D. W.; Gray, A. S.; Coleman, A. L., and Postman, B. F.: Mercurialism and Its Control in the Felt Hat Industry, Pub. Health Bull. 263, U. S. P. H. S., Government Printing Office, Washington, D. C., 1941.

2. Beal, G. D.; McGregor, R. R., and Harvey, A. W.: Elimination of Mercury Hazard in the Felt Hat Industry, Indust. & Engin. Chem., News Ed. 19: 1239 (Nov. 25) 1941.

1. Kruse, H. D.: Medical Evaluation of Nutritional Status: IV. The Ocular Manifestations of Avitaminosis A, with Especial Consideration of the Detection of Early Changes by Biomicroscopy, Pub. Health Rep. 56: 1301 (June 27) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

CAMPAIGN FOR CORRECT DIET FOR CIVILIAN DEFENSE

Representatives of the federal government, the municipal health department, the organized medical, dental and nursing professions, food industries and welfare agencies addressed a meeting in the Health Building, New York City, December 10, which opened a campaign to encourage the use of correct diets as an essential phase of civilian defense. The health commissioner of New York City, Dr. John L. Rice, who presided, said that the principal objectives of the program were to see that no one lacks sufficient food; second, that the wastage of food in homes and restaurants be stopped, and, third, to prevent the hoarding of food. The acting mayor, Newbold Morris, pointed out that the problem was mainly one of education and recommended as educational material a booklet prepared for distribution by the city health department entitled "Food Joins the Colors." Dr. W. H. Sebrell, deputy assistant director of the Federal Security Agency in charge of nutrition, pledged the support of various coordinating bureaus of the federal government in the nutrition program in the various cities. Assistant Superintendent of Schools William Jansen said that plans had already been worked out for the mass feeding of children that might have to leave New York City. Deputy Welfare Commissioner Leo Arnstein said that his department aided the needy to get proper diet not only by direct cash assistance but also through three thousand investigators of the department giving clients on relief advice on nutrition. City Markets Commissioner William F. Morgan Jr. said that no bombing of the New York City area would cause serious food shortage, as the most exact information exists on what food and how much is handled at each market and depot, and preparations have been made to reroute food deliveries in case of bombings. Among the other speakers were Dr. Maximilian A. Ramirez, president-elect of the New York County Medical Society; Dr. Adam Eberle, general medical superintendent of the hospitals department; Dr. John O. McCall, director of the Guggenheim Dental Clinic, and Clarence Francis, president of the General Foods Corporation.

RECREATION CENTERS AND SERVICE CLUBS

The army has built one hundred and nine service clubs on military reservations throughout the country to provide the recreation and social advantages of a men's club for enlisted personnel; twenty-two others are under construction, while ninety-three guest houses are already operating and nineteen others have been authorized. These clubs are designed for recreational reading, refreshments, musicals, parties, dances and as a meeting place for enlisted men, their families and friends. Accommodations for overnight guests and quarters for hostesses are furnished in guest houses constructed nearby as an adjunct to the service clubs, which are of three general types, depending on the size of the garrison. The largest type club has three hostesses and one librarian. An allotment of \$10,500 was made to equip each of the medium sized (SC-4) clubs. Guests occupying the guest houses are charged a nominal sum to defray the cost of laundering linens and necessary housekeeping service. The usual cost per person is 50 cents a night.

Paul V. McNutt, director of defense health and welfare services, announced on November 28 completion of construction at Fayetteville, N. C., of the first two of several hundred service men's recreation centers. The Fayetteville centers are among the two hundred and seventy-three constructions and renovations being provided with federal money through the Community

Facilities Act, in communities near army camps and naval posts, almost all of which were to be finished by New Year's. Fayetteville, with a normal population of 18,000, is 10 miles from Fort Bragg, where the garrison amounts to nearly seventy thousand; during the maneuvers about one hundred and twenty thousand soldiers were in that area. The Fayetteville Defense Recreation Council, cooperating with the Federal Security Agency, has undertaken to coordinate community recreation, utilizing facilities in schools, churches and private homes, which, however, in themselves were insufficient.

UNNECESSARY AMBULANCE CALLS AND THE SHORTAGE OF INTERNS

The commissioner of hospitals of New York City, Dr. Willard C. Rappleye, announced on Dec. 21, 1941 that it probably would be necessary in the near future to discontinue interns on the ambulances of the voluntary and municipal hospitals, owing to the increasing shortage of interns. Because of the need of medical officers for the expanding army and navy, many interns will be called to military duty.

Under the plan contemplated, trained attendants competent to deal with first aid and emergency care will be provided on each ambulance. All patients requiring diagnosis or medical attention will be promptly brought to the hospital, where they will be seen in the emergency ward and proper diagnosis and treatment established. Those who require hospitalization will be admitted; those who require only temporary care will be kept in the emergency ward until they can be discharged.

Dr. Rappleye stated that the Department of Hospitals and the voluntary institutions have for months been working on plans to provide trained ambulance attendants to take the place of interns on ambulances. In most large cities the ambulance service is manned by nonmedical personnel. At present in New York City less than half of the ambulance calls are for emergencies; many of the calls are for medical attention in the home or for minor injuries which could be taken care of in an outpatient department or by a neighborhood physician. Commissioner Rappleye appeals to individuals, families and community organizations to cooperate by going to private physicians or to outpatient departments and hospitals for medical attention rather than calling ambulances to their homes for ordinary illnesses or minor complaints.

The program now being studied would not change the medical and nursing personnel in the eighty emergency units now organized throughout the city that are standing by for any major catastrophe in the community.

LABORATORY AIDS IN DIAGNOSIS OF NEUROTROPIC VIRUS DISEASES

An item was printed in this section of THE JOURNAL, November 8, page 1631, concerning laboratory aids in the diagnosis of neurotropic virus diseases. In this circular letter from the Office of the Surgeon General, U. S. Army, it was stated that the Virus Laboratory of the Army Medical School would undertake to perform special diagnostic tests on specimens submitted from the field. It is apparent now that civilian physicians and hospitals gained the impression that this army laboratory service would be available for their use, as numerous requests from these sources for further information about this service has been received at the Army Medical School. The Surgeon General's Office desires to announce that this special laboratory service cannot be made available to civilians at this time.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Illinois and Michigan:

ALPNER, Sam, 1st Lieut., Battle Creek, Mich., 1609th Corps Area Service Unit, Fort Custer, Mich.
DOLAN, Patrick T., 1st Lieut., Pittsfield, Ill., 5th Division, Fort Custer, Mich.
GOODMAN, Daniel H., 1st Lieut., Galesburg, Ill., Reception Center, Camp Grant, Ill.
HERBERT, Walter N., 1st Lieut., Yale, Mich., Reception Center, Fort Custer, Mich.
KANTER, Lester, 1st Lieut., Chicago, 5th Infantry Division, Fort Custer, Mich.
KETTERER, Francis H., 1st Lieut., Breese, Ill., Reception Center, Scott Field, Ill.
KOVEN, Arthur Jerome, 1st Lieut., Maywood, Ill., Reception Center, Fort Custer, Mich.
LEAVITT, Arnold H., 1st Lieut., Chicago, Reception Center, Fort Custer, Mich.
MUNCH, Robert F., 1st Lieut., Chicago, Reception Center, Camp Grant, Ill.

POMARANC, Mark M., 1st Lieut., Chicago, Station Hospital, Camp McCoy, Wis.
PUTRA, Anthony Marion, 1st Lieut., Detroit, 33d Division, Camp Forrest, Tenn.
REID, Stephen E., 1st Lieut., Chicago, Station Hospital, Camp Grant, Ill.
ROBBINS, Fred Phillip, 1st Lieut., Chicago, Will Rogers Field, Oklahoma City.
WEISBERG, William Wiener, 1st Lieut., Chicago, Reception Center, Scott Field, Ill.
WINSAUER, Henry John, 1st Lieut., Kohler, Wis., Fred Harman, Ballinger, Texas.
YESINICK, Louis, 1st Lieut., Chicago, 1609th Corps Area Service Unit, Fort Custer, Mich.
ZIMMERMAN, Nathan, 1st Lieut., Chicago, Parks Air College, East St. Louis, Ill.

Orders Revoked

ESPENSCHIED, John S., 1st Lieut., Danville, Ill., Parks Air College, East St. Louis, Ill.
LEPPERT, Charles L., 1st Lieut., Rockford, Ill., Reception Center, Camp Grant, Ill.

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

HARVEY, George, Jr., 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Snelling, Minn.
JERNIGAN, James Powell, 1st Lieut., Little Rock, Ark., Corps Area Service Command Station Hospital, Camp J. T. Robinson, Ark.
MILLER, Richard White, 1st Lieut., Fayetteville, Ark., Corps Area Service Command Station Hospital, Camp J. T. Robinson, Ark.
OTTEN, Donald Earnest, 1st Lieut., Minneapolis, Corps Area Service Command Induction Station, Fort Snelling, Minn.

REDMOND, William Storey, 1st Lieut., St. Joseph, Mo., Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
STUMP, Robert Byron, 1st Lieut., Iowa City, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
SWANSON, Vincent Francis, 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Snelling, Minn.

Orders Revoked

STAUFFER, Harry B., Major, Jefferson City, Mo., Station Hospital, Camp J. T. Robinson, Ark.

Relieved from Active Duty

CHUNN, Stanley Sylvester, 1st Lieut., Pipestone, Minn., Fort Omaha, Neb.
SMAZAL, Stanley Francis, 1st Lieut., Davenport, Iowa, Fort Des Moines, Iowa.

NINTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Ninth Corps Area, which comprises the states of Washington, Montana, Oregon, Nevada, Utah, California and Idaho:

ANDERSON, Edward R., 1st Lieut., Tacoma, Wash., Fort Lewis, Wash.
BELL, Lloyd T., 1st Lieut., Culver City, Calif., Camp Callan, Calif.
BROOKE, Joseph M., 1st Lieut., Ronan, Mont., Station Hospital, Fort Lewis, Wash.
CHONG, Harry S., 1st Lieut., Sacramento, Calif., West Coast Air Corps Training Center, Moffett Field, Calif.
COHEN, Sidney, 1st Lieut., Provo, Utah, 7th Division, Fort Ord, Calif.
HAMILTON, Robert L., Captain, Marysville, Calif., Camp San Luis Obispo, Calif.
HARRIS, Chester S., Colonel, San Francisco, Recruiting and Induction Board, San Francisco.
JACOBSON, Hjalmer A., Captain, Fresno, Calif., Camp Roberts, Calif.

KAY, Raymond M., 1st Lieut., Van Nuys, Calif., Letterman General Hospital, San Francisco.
OWYANG, Edwin, 1st Lieut., San Francisco, Medical Replacement Training Center, Camp Grant, Ill.
SAYLIN, Joseph, Colonel, Pacific Palisades, Calif., Camp Roberts, Calif.
WENDLE, Cornelius C., 1st Lieut., Sandpoint, Idaho, Station Hospital, Fort Lewis, Wash.

Relieved from Active Duty

CLOTHIER, William L., 1st Lieut., Camp Callan, Calif.
COLLINGS, Maurice M., 1st Lieut., Fresno Air Base, Calif.
FISHER, Louis J., 1st Lieut., 53d Evacuation Hospital, Camp San Luis Obispo, Calif.
GARDENIER, William H., 1st Lieut.
GOURSON, Nathaniel E., 1st Lieut.
KOSTICHEK, Robert J., 1st Lieut., 7th Division, Fort Ord, Calif.
MCDONALD, John B., 1st Lieut., Camp San Luis Obispo, Calif.
MILLER, Ernest C., 1st Lieut., McChord Field, Wash.
SASLAW, Lewis B., Captain.

ORDERED TO FOREIGN DUTY

BARALD, Fred Charles, 1st Lieut., New Haven, Conn., Station Hospital, Losey Field, Ponce, Puerto Rico.
BELZ, Joseph Aloysius, Captain, 25th Division Artillery Dispensary, Schofield Barracks, Honolulu, Hawaii.
BRENNAN, John James, 1st Lieut., Post of Manila, Manila, Philippine Islands.
CHESLER, William, 1st Lieut., Philadelphia, 70th Medical Battalion, Fort Clayton, Canal Zone.
CORRADO, Albert Guy, 1st Lieut., Connellsville, Pa., Fort Amador, Balboa, Canal Zone.
COUNTER, Henry Milton, 1st Lieut., Ladd Field, Fairbanks, Alaska.
CULVER, Wesley Youngs, 1st Lieut., Westhampton Beach, N. Y., Fort Clayton, Canal Zone.
DAY, Romney Maxwell, 1st Lieut., Albrook Dispensary, Albrook Field, Canal Zone.
DETER, Dwight Meyer, Captain, Austin, Texas, Station Hospital, Fort Mills, Corregidor, Philippine Islands.
FLAIG, Julian Vincent, Captain, Station Hospital, Schofield Barracks, Honolulu, Hawaii.
GLUKFELD, Jerome Phillip, 1st Lieut., San Francisco, Fort Richardson, Alaska.
GOLD, Jacob Louis, Captain, Brooklyn, Schofield Barracks, Honolulu, Hawaii.

GOLDBERG, Joseph Dancis, 1st Lieut., New York, Station Hospital, Schofield Barracks, Honolulu, Hawaii.
GROSSMAN, Aaron, Captain, Department Training Center, Rio Hato, Albrook Field, Canal Zone.
HAYNES, Henry Matthais, Jr., 1st Lieut., Gatesville, Texas, Yakutat Landing Field, Yakutat, Alaska.
JONES, Leonard Bonham, 1st Lieut., Taft, Texas, Station Hospital, Fort Greely, Kodiak, Alaska.
KENDIG, Tom Atkins, 1st Lieut., San Antonio, Texas, Station Hospital, Fort Greely, Kodiak, Alaska.
KRAJESKI, Romuald John Frank, 1st Lieut., Wilkes-Barre, Pa., Panama Canal Department, Quarry Heights, Balboa Heights, Canal Zone.
MORTON, John Buck, 1st Lieut., Gray, Ga., Department Training Center, Rio Hato, Balboa Heights, Canal Zone.
MUSSELMAN, Merle McNeil, 1st Lieut., Omaha, Station Hospital, Fort Stotsenburg, Philippine Islands.
NICOSIA, Ralph Vincent, 1st Lieut., Houston, Texas, Tripler General Hospital, Honolulu, Hawaii.
TOWNSEND, Frank Marion, 1st Lieut., Harwood, Texas, Panama Coast Artillery Command, Fort Amador, Balboa, Canal Zone.
WANNER, Jay George, Captain, Medical Detachment, 2d Battalion, 37th Infantry, Fort Greely, Kodiak, Alaska.

ORGANIZATION SECTION

MEDICAL ECONOMIC ABSTRACTS

REAL LIFE TABLES EXCEED HYPOTHETICAL

In 1922 and again in 1933 the Metropolitan Life Insurance Company prepared hypothetical life tables to show where improvement in mortality might be expected. The census bureau has now issued a similar table based on the experience of white females in the general population of the United States for the period 1930 to 1939. The remarkable fact is that this table, based on actual experience, is almost identical with the hypothetical ones prepared almost twenty years earlier. "Except for the first year of life and at ages 50 and 60," says the Metropolitan Statistical Bulletin for November 1941, "the actual death rates for white females in 1930-1939 proved to be lower than in the hypothetical table of 1922. Thus have the hopes of the hypothetical table been not merely realized but surpassed by actual experience—and all this within two decades."

Another hypothetical table was prepared in 1933 based essentially on certain assumed reductions from the mortality of New Zealand females for 1931. Already actual experience is surpassing this new hypothetical table in some respects. "We have reason to believe," says the Bulletin, "that when all the data from our 1940 census are in it will be found that large sections of this country, principally in the Midwest, have mortalities as favorable as those of New Zealand." A new hypothetical table is again being prepared which starts with an expectation of life at birth of 70.78 years.

EXPLOITING MEDICAL SERVICE PLANS

The British Columbia Medical Association has for some time operated a prepayment plan much like the plans conducted by several of the state medical associations in the United States. Contracts have been made with industrial and other groups and the physicians have agreed to accept a reduction of 25 per cent from their regular fee schedules in payment for services rendered to those enrolled under the plan.

Within recent months, according to the Bulletin of the Vancouver Medical Association for November 1941, a number of quasi-insurance companies with various names have arisen. These undertake the sale of policies purporting to insure the beneficiary against the costs of sickness. When the patient has had an operation, the bill is sent to the patient for the full amount of the regular fee schedule. The organization then deducts 25 per cent of this bill and sends a check for the remainder to the physician. There is no contract between these companies and the medical association to accept any such reduction in fees. While the contracts with groups under the medical association plan cover all medical services, these company plans pay only for surgical operations.

The Bulletin comments on this situation as follows:

A very serious point for us to consider is that by accepting these people and their terms we are allowing a very dangerous principle to be introduced into the practice of medicine: this is third party gain. It is a dangerous principle that a third party should make money out of the sick and squeeze out of both the sick and the doctors attending them profit which they have not earned. Our Medical Services Association exists, and we should urge people to join this. It gives infinitely more value for their money and is under close supervision and control.

The modus operandi of these gentry is to send a curtailed check and, if the doctor protests, to utter all sorts of threats of blacklisting, etc., as well as to assure the doctor that every one else is accepting the cut. We think that the only answer to this sort of blackmail is to insist firmly on payment of our bill and ignore completely their threats. If we tell our patients the facts and show them where they can get equitable, honest and complete medical service on a health insurance basis, we shall have done them a service and helped to protect them, as well as ourselves, against what is fast becoming a racket.

PROGRAM OF INDIGENT CHILD CARE IN TEXAS

The Texas Department of Public Welfare, before entering on the program of aid to indigent children, conferred with the Council of Medical Economics of the State Medical Association of Texas. After frequent conferences and correspondence, the following agreement as to the medical services involved was drawn up and accepted by both parties:

This plan for securing medical examinations of parents claiming physical or mental incapacity under the Aid to Dependent Children Program constitutes an agreement made by and between the Texas State Department of Public Welfare and the State Medical Association of Texas and is predicated on the following statement of facts:

The Forty-Seventh State Legislature, acting under the authority of a constitutional amendment, appropriated \$1,500,000 to use for aid to dependent children. The legislature also made provision for participation in federal funds made available through the Social Security Act for aid to dependent children, which means that Texas can receive \$1,500,000 in federal funds for this program. In other words, the State Department of Public Welfare is now responsible for the administration of \$3,000,000 per year to be used in paying grants to dependent children who meet certain eligibility requirements.

The constitution of Texas, article III, section 51d, restricts payments of state funds to \$8 per month for one child in an eligible family. If there are two or more children in one home, the grant from state funds is limited to \$12 per month. This means that out of a total federal-state expenditure of \$3,000,000, including \$150,000 for administrative cost, one child may not receive a grant in excess of \$16 per month. If there is more than one child in an eligible family, the maximum grant allowable per family for federal-state funds is \$24 per month.

To participate in the Aid to Dependent Children Program, the child must meet definite eligibility requirements. He must be under 14 years of age, a citizen of the United States, a resident of Texas, and be deprived of parental support or care by reason of death of parent, continued absence from home or physical or mental incapacity.

The parent of every child claiming eligibility on the basis of physical or mental incapacity must have a medical examination to determine the presence and extent of incapacity. The parent must also be reexamined from time to time to establish continuing eligibility. As already pointed out, administrative funds are limited to \$150,000 per year (5 per cent). The administrative fund must be used to pay salaries and travel of the investigators, clerical assistance, postage, physical and mental examinations, and so on.

The department will pay \$3 for routine physical or mental examinations, and the same fee (\$3) will be allowed for each routine reexamination. The routine examination must include an examination of the entire body, a urinalysis, blood pressure, temperature and pulse rate. Only physicians who are legally licensed to practice medicine in Texas will be used, and the parent will have the choice of selecting from among these. Appropriate examination forms will be furnished by the State Department of Public Welfare, and the examination fee will be paid directly to the physician.

The department realizes that in rare cases it may not be possible to determine physical or mental incapacity without more complete laboratory work, x-ray and consultation with a specialist. For these few cases the examining physician is requested to write an individual letter to the State Department of Public Welfare, Austin, Texas, setting forth in detail the amount of laboratory test, x-ray and consultation services required. The department will then work out, on an individual case basis, with the examining physician, fees to be paid for the required services in line with those received in private practice for similar services from persons in average financial condition in the community in which the examining physician resides.

OFFICIAL NOTES

ADDRESSES BY THE PRESIDENT-ELECT

Dr. Fred W. Rankin, President-Elect of the American Medical Association, has been scheduled to deliver the following addresses during January:

January 16-17.—Visiting Surgeons' Club, Cleveland.

January 21.—Bronx County Medical Society, New York.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Refresher Courses.—The University of California Medical School will offer a refresher course on "Clinical Aspects of New Therapy" in Toland Hall, University of California Hospital, San Francisco, January 5-7. Designed to meet the needs of practicing physicians, the course will include the following subjects: sulfonamide drugs, drugs used on the central nervous system, organotherapy, and drugs used in treatment of diseases of the adrenal glands; new drugs acting on the heart and circulation, and clinical aspects of nutrition. Members of the faculty will participate. Complete programs may be obtained from the Dean's Office, University of California Medical School, San Francisco.

Effects of Different Lunches on School Children.—The state defense nutrition committee, the department of public health and the University of California Medical School, San Francisco, are cooperating in a two year nutrition study among school children in Santa Barbara County, to begin early this year. The study will be made by evaluating the effects of different types of lunches on the nutritional status of children in a representative section of Santa Barbara County. Three groups of two hundred children each will receive three different types of lunch. One group will eat lunches they are accustomed to bring from home. A second group will eat a scientifically balanced lunch prepared at school, and the third group will eat lunches from home but will be given a supplementary pellet supercharged with vitamins and minerals. The nutritional status of all the children will be checked before the study begins; vitamin and mineral reserves will be measured. Medical examinations of the children will be made at regular intervals, and a final survey will be made of the results of the program.

GEORGIA

Society News.—Dr. Cyrus W. Strickler Sr., Atlanta, addressed the Muscogee County Medical Society recently in Columbus on "Development of Treatment Methods in the Management of the Pneumonias."—The Georgia Urological Association was addressed, October 9, among others, by Drs. William F. Reavis and Lovick W. Pierce, Waycross, on "Renal Calculi."

Hospital News.—A federal grant of \$160,000 has been given to the Phoebe Putney Memorial Hospital, Albany, to provide construction and equipment of a new hospital and alterations. Existing facilities are inadequate at the hospital on account of increased defense activities at Turner Field, Darr Aero Tech Flying School and in the nearby towns of Bainbridge, Moultrie, Valdosta and Americus.

Annual Pediatric Meeting.—The Georgia Pediatric Society convened in annual session at the Biltmore Hotel, December 11. The speakers included:

Dr. Albert B. Sabin, Cincinnati, Epidemiology of Poliomyelitis.
Dr. Philip F. Barbour, Louisville, Ky., Active and Passive Immunization of Tetanus.
Dr. George M. Lyon, Huntington, W. Va., Sulfaguanidine Treatment of Bacillary Dysentery.

At an evening session Dr. Lyon discussed "Chemotherapy of Meningitis"; Dr. Barbour, "Rehabilitation of Poliomyelitis Patients," and Dr. Sabin, "Pathology, Symptomatology and Treatment of Poliomyelitis."

ILLINOIS

Precommitment Services for Mental Patients.—At a recent meeting of the managing officers of the mental institutions in Jacksonville, a plan of precommitment consultation service was adopted to be available to judges, physicians, relatives of patients, private and public welfare agencies and other professional groups. The service consists of an examination and an evaluation of a mental patient for whom admission to a state mental hospital is planned, to determine whether such institutionalization is needed and whether a more satisfactory plan can be worked out for the patient within his own community. The precommitment service will be limited to a single diagnostic interview, after which recommendations will be given the relatives, judge, physicians and other referring individual

or organization. It will be offered both at the hospital itself and also on a regular monthly basis in several centers of population in the counties the hospital serves, according to the *Welfare Bulletin*.

Chicago

Courses in Obstetrics.—Five postgraduate courses in obstetrics, each of four weeks' duration, will be offered at the Chicago Lying-In Hospital between January 12 and June 6, under the sponsorship of the state department of health and the Children's Bureau, U. S. Department of Labor. Features of the program consist of observations on current managements of normal and abnormal states of the pregnant, parturient and puerperal patient. There will be lectures, demonstrations, clinics and other teaching means to augment the operating room and birth room observations, and ward round discourses. The courses will be run on a nonprofit basis. A deposit of \$25 is required on registration, \$10 of which will be refunded at the completion of the course. Additional information and application blanks may be obtained by request from the Postgraduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Avenue.

MARYLAND

Mosquito Control Program.—The state department of health has set up a mosquito control program in Maryland to control mosquito breeding in defense areas, primarily in the vicinity of the Aberdeen Proving Ground, the Edgewood Arsenal, the Bethlehem Steel Company, the Glenn L. Martin Company, Camp Holabird and the U. S. Naval Powder Factory at Indian Head. The work will consist of the application of oil to sluggish streams, small ponds and stagnant pools, the clearing of underbrush adjacent thereto and the draining of salt marshes where necessary. The project will be under the direction of a sanitary engineer detailed by the U. S. Public Health Service and the state bureau of sanitary engineering. The WPA has allocated \$42,000 to Maryland for the program and furnished all labor.

MASSACHUSETTS

Evans Memorial Lecture.—Dr. Alvah H. Gordon, Montreal, gave the first in the series of Robert Dawson Evans Memorial Lectures in Evans Auditorium, Boston, November 21. His subject was "Bone Changes in Certain Medical Diseases."

Personal.—Dr. John E. Gordon, Charles Wilder professor of medicine and epidemiology and head of the department, Harvard Medical School, and director of the American Red Cross-Harvard Hospital Unit in southwestern England, arrived in New York, November 10, on the Atlantic clipper. He came for a vacation and to recruit American staff members for the unit.

Society News.—Dr. John Romano, Boston, among others, addressed the Boston Society of Biologists, December 10, on "Psychiatric Manifestations of the Spontaneous Hypoglycemia."—The Massachusetts Society for Research in Psychiatry was addressed, December 9, by Saul Rosenzweig, Ph.D., and Dr. George E. Gardner, Boston, on "Sudden Death in the Anamnesis of Schizophrenia" and "Transient Psychotic Manifestations in Children."

Cancer Work at Harvard.—Harvard University and the Massachusetts General Hospital, Boston, have reached an agreement whereby the main phases of the work in cancer treatment and research now being carried on by the Collis P. Huntington Memorial Hospital of Harvard Medical School will be transferred to the general hospital. The step was taken because of the belief that the care and treatment of medical specialties can be more efficiently handled as part of a large institution of general scope than in smaller individual units. Under the new arrangement there will be transferred to the Massachusetts General Hospital the inpatient and outpatient services at the Huntington Memorial. The laboratory and research work now carried on by the Harvard Cancer Commission, established in 1899, will continue under the supervision of the commission. The research activities of Dr. Joseph C. Aub, associate professor of medicine at the Harvard Medical School, will be carried on at the general hospital in connection with the tumor clinic which the hospital has been conducting for many years. The remainder of the varied research work of the cancer commission will be continued in conjunction with the medical school. The equipment of the general hospital, including its 1,000,000 volt x-ray machine, will be available to all

patients at both the Huntington and the general hospital, and the Harvard supply of radium, heretofore used at the Huntington, will be available to the Massachusetts General Hospital. There will be no reduction in the number of beds for cancer patients in the community.

MICHIGAN

Society News.—The general practice section of the Wayne County Medical Society and the Detroit Pediatric Society were addressed, December 15, by Dr. Richard C. Eley, Boston, on "Nutritional Requirements of Infants and Children." Dr. Herrman L. Blumgart, Boston, will address a general meeting of the society, January 15, on "Coronary Collateral Circulation: Its Clinical and Pathological Significance."

Changes in Health Officers.—Dr. Frederick S. Leeder, Coldwater, director of the Branch County Health Department, has resigned to engage in research. Dr. Robert B. Harkness, Battle Creek, formerly director of the Barry County health unit, will serve as acting director of Branch County pending a permanent appointment.—Dr. Henry G. Steinmetz, Arlington, Va., is health commissioner of Genesee County during the absence of Dr. Leslie V. Burkett, Flint, who is taking postgraduate work in public health at Columbia University, New York.

Reelection of Examining Board.—The Michigan State Board of Registration in Medicine at its annual meeting in Lansing, October 14, reelected Drs. Elmer W. Schnoor, Grand Rapids, president; Claude R. Keyport, Grayling, vice president, and J. Earl McIntyre, Lansing, secretary. Attorney General Herbert J. Rushton appointed Mr. Milton G. Schanecupp, Owosso, special assistant attorney general, as legal counsel and investigating officer to the board. During the week previous to the board's meeting the governor reappointed Drs. Schnoor and Luther Peck, Plymouth, as members of the board and named Dr. Eugene S. Thornton, Muskegon, to succeed Dr. Garner M. Byington, Detroit; Dr. Harold L. Morris, Detroit, to succeed Dr. William C. Ellet, Benton Harbor, and Dr. Charles W. Balser, Detroit, to succeed Dr. Francis B. Jarzembowski, Detroit. Dr. Morris and Dr. Thornton have previously served as members of the board.

MINNESOTA

Dr. Collier to Give Judd Lecture.—Dr. Frederick A. Collier, professor of surgery and chairman of the department of surgery, University of Michigan Medical School, Ann Arbor, will deliver the E. Starr Judd lecture at the University of Minnesota in the Chemistry Auditorium, Minneapolis, January 21. His subject will be "A Review of Studies on Water and Electrolyte Balance in Surgical Patients." The late Dr. Judd, an alumnus of the University of Minnesota Medical School, established this lectureship in surgery a few years before his death.

MISSOURI

Annual Hodgen Lecture.—Dr. Edwin P. Lehman, professor of surgery and gynecology at the University of Virginia Department of Medicine, Charlottesville, will deliver the annual Hodgen Lecture at the St. Louis Medical Society, January 13. His topic will be "The Use of Heparin."

Personal.—Dr. Evarts A. Graham, professor of surgery at Washington University Medical School, St. Louis, has been elected a member of the Royal Society of Sciences of Uppsala, Sweden, an organization founded in 1710. Dr. Graham was the only American among the five members of the society elected at this time. The election of membership is based on scientific merit. Dr. Graham is responsible for advances particularly in the fields of cholecystography and of chest surgery.—Dr. Hugh W. Maxey has been appointed surgeon and directing head of the Missouri State Penitentiary Hospital, Jefferson City, newspapers report.

NEBRASKA

District Meetings.—The Fourth Councilor District Medical Society devoted its recent meeting to a symposium on fractures sponsored by the Six County Medical Society. The speakers were Drs. William L. Sucha, Omaha, James W. Martin, Omaha, and Charles F. Ferriot, Lincoln.—The Seventh Councilor District Medical Society was addressed in Sutton recently by Drs. Joseph E. Uridil, Hastings, on "Infections of the Hand"; Raymond J. Wyrens, Omaha, on "Use of Sulfonamide Drugs in Internal Medicine," and Rolland Russell Best, Omaha, "Application of the Biliary Flush in Biliary Tract Disease."

NEW YORK

Distribution of Sulfadiazine for Pneumococcic Infections.—Sulfadiazine has recently been made available through the state department of health to registered doctors of medicine and hospitals in the state, exclusive of the city of New York, according to *Health News*. As with sulapyridine and sulfathiazole, state issued sulfadiazine is intended only for those patients for whom purchase of this drug would be a hardship. The drug may be obtained in packages of sixty tablets of 0.5 Gm. each from laboratory supply stations. To comply with the ruling of the state board of pharmacy, the actual signature of physicians requesting sulfonamide drugs is required.

Personal.—Oscar Riddle, Ph.D., of the department of genetics of Carnegie Institution of Washington at Cold Spring Harbor, has been elected a foreign corresponding member of the Academia Nacional de Medicina, according to *Science*.—Dr. William H. Ross, Brentwood, first president of the Suffolk County Tuberculosis and Public Health Association, was presented with a citation for public service in recognition of his "farsighted leadership and unselfish service." The presentation was made on the occasion of the association's twenty-first anniversary in Patchogue recently.—Dr. John R. Ross, superintendent of the Harlem Valley State Hospital, Wingdale, was appointed head of the Hudson River State Hospital at Poughkeepsie, effective November 30, succeeding the late Dr. Ralph P. Folsom. Dr. Ross has been in the state hospital service since 1908.

Postgraduate Courses.—A postgraduate course on general medicine, arranged by Dr. Walter W. Palmer, New York, for the Westchester County Medical Society, will open at New York Hospital, Westchester division, White Plains, January 14, with a talk on "Nephritis" by Dr. Dana W. Atchley, associate professor of medicine, Columbia University College of Physicians and Surgeons. On March 11 asthma will be discussed by Dr. Albert VanderVeer, New York, and on May 13 rheumatic fever by Dr. Homer F. Swift of the Rockefeller Institute for Medical Research. A course on general medicine was given before the Rockland County Medical Society at the Summit Park Sanatorium, Pomona. Speakers, all of New York, included:

Dr. David D. Moore, Diabetes Mellitus, November 7.
Dr. Ralph G. Stillman, Significance of Laboratory Tests and Methods in the Practice of Medicine, November 14.
Dr. John D. Lyttle, Nephritis, November 21.
Dr. Norman H. Plummer, Newer Chemotherapeutic Methods, November 28.
Dr. William B. Sherman, Asthma, December 5.
Dr. Leslie P. Barker, Syphilis, December 12.
Dr. Paul Reznikoff, Diagnosis and Treatment of Anemia, December 19.

New York City

Academy of Medicine Seeks Million Dollar Endowment.—The New York Academy of Medicine has launched a five year plan to obtain an endowment of "at least a million dollars" to insure an annual income sufficient to meet the requirements of continually enlarging services to the community, according to *New York Medical Week*.

Society Honors Ex-Presidents.—The first annual dinner to ex-presidents of the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn will be held at the Hotel St. George, Brooklyn, January 17. Dr. Samuel J. Kopetzky, president of the state medical society, will present medals and scrolls, and speakers will be Hon. Fiorello H. LaGuardia, mayor of the city of New York, and Dr. Morris Fishbein, editor of THE JOURNAL. The Doctors' Orchestra will furnish the music.

Lectures for the Public.—The seventh series of lectures for the public on the army, art and romance of medicine, sponsored by the New York Academy of Medicine, opened on November 13 with the delivery of the Linsly R. Williams Memorial Lecture by Dr. James Alexander Miller, professor of clinical medicine, Columbia University College of Physicians and Surgeons. Dr. Miller's subject was "Tuberculosis: The Known and the Unknown." The second lecture was given by Dr. Tracy Jackson Putnam, professor of neurology and neurosurgery at Columbia, December 11, on "Mechanisms of the Mind." Other lectures in the series will be:

Dr. Abraham A. Brill, The Freudian Epoch (New York Academy of Medicine Anniversary Discourse), January 22.
Dr. Arnold L. Gesell, New Haven, Conn., Creative Behavior in Child and Adult, February 26.
Dr. Norman H. Jolliffe, History of Vitamin B, March 26.
Dr. Anton J. Carlson, Chicago, Newer Knowledge on Nutrition, April 23.

OHIO

Chief of Child Hygiene Division.—Dr. Susan P. Souther, formerly child hygiene physician in the bureau of child hygiene, Connecticut State Department of Health, Hartford, has been appointed chief of the division of child hygiene in the Ohio State Department of Health, Columbus.

Dr. Spies Wins Pharmaceutic Award.—The Award of Distinction of the American Pharmaceutical Manufacturers' Association was presented to Dr. Tom D. Spies, associate professor of medicine, University of Cincinnati College of Medicine, Cincinnati, during a meeting in Washington, D. C., December 8, in recognition of his work on nicotinic acid. The award is made annually to an investigator who, in the opinion of the committee, has made a fundamental contribution to public health in the field of drug therapy.

Society News.—Dr. Marion A. Blankenhorn, Cincinnati, discussed "Avitaminosis" before the Summit County Medical Society in Akron, December 2.—"Health in the Emergency" was discussed at a meeting of the Public Health Federation, Cincinnati, December 1, by Drs. Harry S. Sullivan, Washington, D. C., Arthur T. McCormack, Louisville, and John T. O'Rourke, D.D.S., Louisville.—Dr. Elmer L. Sevringhaus, Madison, Wis., discussed "Endocrine Treatment of Pituitary Disorders" before the Academy of Medicine of Cleveland, December 19. A tuberculosis committee has been formed by the academy to study the local tuberculosis setup and to make recommendations to the county commissioners; members of the committee are Drs. Joseph T. Wearn, Cleveland, chairman; Robert H. Browning, Warrenville; Raymond C. McKay, Edgar P. McNamee, Ulysses G. Mason Jr. and Charles F. Good, Cleveland.

Changes in the Faculty at Western Reserve.—Recent promotions on the faculty of Western Reserve University School of Medicine, Cleveland, include the following:

Dr. James R. Driver to associate clinical professor of dermatology and syphilology.

Donald E. Gregg, Ph.D., associate professor of physiology in the department of medicine.

Dr. Fred W. Dixon, assistant clinical professor of otolaryngology.

Dr. Curtis F. Gaivin, assistant professor of medicine.

A. Sidney Harris, Ph.D., assistant professor of physiology.

Dr. Joseph Seifter, assistant professor of pharmacology.

Dr. Reginald A. Shipley, assistant professor of medicine.

Dr. Charles T. Way, assistant clinical professor of medicine.

Dr. Clarence C. R. Jackson, assistant clinical professor of otolaryngology.

New appointments to the school include Ralph I. Dorfman, Ph.D., as assistant professor of biochemistry, assigned to the Brush Foundation.

OREGON

Changes in Health Officers.—Dr. Harry J. Anderson, Corvallis, has been named health officer of Benton County, succeeding Dr. William T. Johnson, who held the position for many years. The latter, who is retiring, also acted as health officer of Corvallis.—Dr. Clarence R. E. Lindgren, Eugene, has been appointed health officer of Lane County.

Society News.—Dr. William W. P. Holt, Medford, discussed "Pylorospasm" before the Jackson County Medical Society in Ashland, November 12.—Dr. Joe B. Davis, Portland, addressed the Marion-Polk Medical Society in Salem, November 18, on disorders of the foot.—Officers of the state medical association and the Mid-Columbia Medical Society met jointly at Hood River, November 17; Dr. William W. Baum, Salem, president of the state association, discussed activities of the society and Dr. Roger H. Keane, Portland, postgraduate educational opportunities.—The Umatilla County Medical Society devoted its meeting in Pendleton, November 12, to a panel discussion on sulfonamide compounds; the speakers were Dr. Norman A. David, professor of pharmacology, University of Oregon Medical School, Portland, and Dr. Joseph P. Brennan, Pendleton.—Dr. Stuart W. Harrington, Rochester, Minn., discussed "Diagnosis and Treatment of Carcinoma of the Breast" before the North Pacific Surgical Association, Portland, November 10.

VIRGINIA

Personal.—Dr. Warren T. Vaughan, Richmond, was awarded the honorary degree of master of science by the University of Michigan, Ann Arbor, October 4.—Dr. Clifford E. Waller, Silver Spring, Md., formerly medical director U. S. Public Health Service, has been appointed health officer of the newly organized health department in Loudoun County at Leesburg.

Grants at Medical College of Virginia.—Dr. Everett I. Evans, instructor in pharmacology and surgery, Medical College of Virginia, Richmond, has been given a grant of \$6,300 by the federal government, Office of Scientific Research Development, for further research on surgical shock, and Dr. John H. Scherer, assistant professor of medicine, Medical College of Virginia, Richmond, a grant of \$3,000 from the John and Mary R. Markle Foundation to continue his work in reticulocytosis in jaundice.

ALASKA

New Medical Society in Kodiak.—The Medical Society of Fort Greely, Kodiak, was organized at a meeting of physicians of the Naval Air Station and the adjoining army post, November 21. Nurses and enlisted personnel of the medical departments on Kodiak Island will be privileged to attend the monthly meetings. Lieut. Harry E. Balch, Kodiak, was chosen first president of the society. The organization meeting of the new group, called by Major Hiram S. Yellen, formerly of Buffalo, followed the opening of a new wing at the Fort Greely Station Hospital. Major Yellen is chief of the hospital.

GENERAL

Commonwealth Fund Aids China.—The Commonwealth Fund, New York, has made a grant of \$50,000 to the American Bureau for Medical Aid to China for the support of the Emergency Medical Service Training School in Kwei-yang, China, according to *Science*.

National Social Hygiene Day.—The sixth National Social Hygiene Day will be observed throughout the country on February 4 with the theme "Keep America Strong, Help Build Better Health." Stress will be placed on the need for intensified action against syphilis and gonorrhea in industrial centers as well as military areas. Special attention will be directed toward the full realization of the menace of organized prostitution in areas adjacent to concentrations of armed forces and in industrial centers. Additional information concerning national and local programs may be received from the American Social Hygiene Association, Inc., 1790 Broadway, New York.

Annual Prize in Obstetrics.—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons announces its annual "Foundation Prize." Three copies of all manuscripts and illustrations entered in a given year must be in hands of the secretary of the association before June 1. Manuscripts must be limited to five thousand words and be typewritten in double spacing on one side of the sheet. Illustrations should be limited to such as are required for a clear exposition of the thesis. A nom de plume must be used. The prize will be \$150, and those eligible to compete include interns, residents or graduate students in obstetrics, gynecology or abdominal surgery and physicians who are actively practicing or teaching obstetrics, gynecology or abdominal surgery. Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., is secretary of the association.

Nutrition Fellowship at Pittsburgh University.—The first of the fellowships in nutrition recently offered by Swift & Company, Chicago, will assist a study on the nature of fats and oils at the University of Pittsburgh, Pittsburgh. The work is under the direction of Charles G. King, Ph.D., professor of chemistry, University of Pittsburgh, and Herbert E. Longenecker, Ph.D., Buhl Foundation research fellow and assistant professor of chemistry. Dr. King, who received his degree at University of Pittsburgh in 1923, is known for his discovery of the chemical identity of vitamin C. Karl F. Mattil, Ph.D., has been appointed research fellow under the Swift grant. All projects to be eligible for the new Swift grants should be aimed at development of fundamental information on the nutritive properties of foods or the application of such information to the improvement of American diet and health.

Vitamin Research Wins Chandler Medal.—Robert R. Williams, D.Sc., chemical director of the Bell Telephone Laboratories of New York, and Roger J. Williams, Ph.D., professor of chemistry, University of Texas, Austin, have been awarded the Charles Frederick Chandler Medal of Columbia University for their work in vitamin chemistry. The former was named for his work on vitamin B₁ and the latter for his discovery of pantothenic acid and for contributions to the knowledge of the vitamin B complex. In commenting on the prize the New York Times states that this is the first time since the establishment of the award in 1910 that two persons have been named as recipients. The prize is a gold medal awarded annually to the person appointed Chandler lecturer under the Charles Frederick Chandler Foundation established by alumni and former students of Professor Chandler.

Committee on Industrial Ophthalmology.—The Section on Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology have appointed a joint committee on industrial ophthalmology to engage in appraisals of industrial visual testing technics, instrumentation, interpretation of results, and to promote programs of education among workers, employers, the medical profession and others. Members of the committee representing the Section on Ophthalmology are Drs. Albert C. Snell, Rochester, N. Y., chairman; Arthur M. Culler, Dayton, Ohio, and Hedwig S. Kuhn, secretary, Hammond, Ind. Members for the academy are Drs. Thomas D. Allen, Chicago; Edwin B. Dunphy, Boston, and John B. Hitz, Milwaukee. Working and advisory relationships have been developed between the new committee and the Council on Industrial Health of the American Medical Association.

Dr. Hume to Head China Famine Relief.—Dr. Edward H. Hume, New York, director of the Christian Medical Council for Overseas Work and former president of the Colleges of Yale-in-China, has been made chairman of the China Famine Relief U. S. A. Inc. founded in 1928. Since 1938 the organization has been sending funds to the war stricken country through the Church Committee for China Relief, which it formed in conjunction with the Federal Council of the Churches of Christ in America and the Foreign Mission Conference of North America. The Church Committee is a member agency of United China Relief. Dr. Hume was born in India of American parents. He graduated at Johns Hopkins University School of Medicine, Baltimore, in 1901. From 1905 to 1927 he was associated with the Colleges of Yale-in-China at Changsha, serving as president from 1923 to 1927. Returning to America, he became executive vice president of the New York Post-Graduate Medical School and Hospital, a position he held until 1933. He became director of the Christian Medical Council for Overseas Work in 1938.

War Conditions and Tuberculosis.—War conditions and the lengthened hours of work in defense industries have reversed the downward trend of tuberculosis, the New York *Times* stated, November 29, in commenting on a survey in the United States and abroad made by Godias J. Drolet, assistant director and statistician of the New York Tuberculosis and Health Association. The survey shows that already a decided increase in tuberculosis mortality is taking place in Europe. Although in the United States generally there has been no sharp change in the rate of this disease, danger signals are appearing, it was stated. In forty-six large American cities surveyed, nineteen showed a rise in tuberculosis mortality during the period from January 1 to November 15. For the entire nation the death rate was 45.9 per hundred thousand of population against 47.1 the year before. In the large cities, however, the death rate was 26 per cent above that of the nation at large. San Antonio had the highest rate, 144 per hundred thousand of population, while St. Paul, with only twenty-eight deaths, had the lowest. The rate in the five cities with more than one million population was for Philadelphia 65, Chicago 61, New York 54, Detroit 51 and Los Angeles 50. Mr. Drolet, who made a tuberculosis survey for the Rockefeller Foundation during the World War, pointed out that with increased activity and overtime work it is urgent that there be a corresponding increase in our vigilance against tuberculosis.

Tracing Source of Typhoid Outbreak.—An outbreak of typhoid in England was recently traced to a carrier, according to a report of Dr. John E. Gordon, director of the American Red Cross-Harvard Field Hospital in England. On September 4 and 9 two small boys living within 75 feet of each other were admitted to the Chippenham Isolation Hospital with a diagnosis of typhoid. On September 15 the Harvard unit was asked to investigate. A search for typhoid carriers and Vidal reactions was made in every member of both families and in the families of three food merchants in the vicinity common to the two families. No infected person was discovered. Other possible sources such as milk, drinking water, vegetable grocers and places visited were eliminated. On October 3 the two children had recovered so that they could converse and admitted having a common playmate, although they did not play with each other. A visit to the home of the third child revealed that the three children frequently played in the river, actually a small creek flowing within 30 feet of the home of this last child. This proved to be the site of a broken sewer which

often overflowed and which had overflowed during the critical incubation period of the two infected children. No case of the disease had been reported in the community for ten years. Subsequent testing disclosed the mother of the third child to be a typhoid carrier and one of a new group of evacuees in the village. It was believed that the children exchanged cookies or bread and butter and that the disease spread through the food prepared by the carrier for her child. The laboratory tests showed that the carrier strain of the mother was phage type A, which was the strain found in the two sick children.

CANADA

Faculty Changes at McGill.—Dr. Theodore R. Waugh, assistant professor of pathology, McGill University Faculty of Medicine, Montreal, has been made associate professor of pathology, and Dr. William L. Ritchie was promoted to be associate professor of radiology and head of the department. Dr. Carleton B. Peirce, director, department of radiology and radiologist in chief at the Royal Victoria Hospital, was made associate professor of radiology.

Lectures for General Practitioners.—The Academy of Medicine of Toronto announces a special course of lectures for the general practitioner, January 5-9. The program will include the following:

- Dr. Percy A. Sarjeant, The Hazard of Air Raids, January 5.
- Dr. John Harold Couch, Personal Protection in Air Raids, January 5.
- Dr. Robert W. Wesley, Significance of Uterine Bleeding from Non-malignant Causes, January 6.
- Dr. Nicholas D'Arcy Frawley, Management of Toxemia of Pregnancy, January 6.
- Dr. Hammett A. Dixon, Diagnosis and Treatment of Common Skin Lesions, January 8.
- Dr. Ross A. Jamieson, Heart Disease in General Practice, January 8.
- Dr. Frank Burns Plewes, Treatment of Hemorrhoids and Varicose Veins, January 9.
- Dr. Charles R. B. Crompton, Significance and Danger of Painless Hematuria, January 9.

There will be a panel discussion on the sulfonamide derivatives, January 7, by Drs. Wilbert Hurst Brown, Philip H. Greey, Wilfred K. Welsh, James L. McCollum and Leslie Nelles Silverthorne. All are from Toronto.

LATIN AMERICA

Brazilian Quarterly Becomes Official Journal for Ophthalmologic Congress.—*Ophthalmologica Ibero-Americana*, the Brazilian quarterly abstract journal, is now the official organ of the Pan American Congress of Ophthalmology. *Ophthalmologica* has appeared only in Portuguese, but after January 1 all abstracts will be printed in Spanish and English or in Portuguese and English. Original articles, reports of scientific activities of the congress, news items and so on will be reproduced in all three languages. Dr. Moacyr E. Alvaro, São Paulo, Brazil, is managing editor, and the committee on literary exchange of the congress, consisting of all the ophthalmic editors of the Western Hemisphere under the chairmanship of Dr. J. Lyó Pavia, Buenos Aires, Argentina, forms the editorial board. *Ophthalmologica Ibero-Americana* will be sent without charge to all members of the Pan American Congress of Ophthalmology who shall have paid dues in advance. An annual membership fee of \$5 will be sufficient to supply the journal to all members and to finance the second Pan American Congress of Ophthalmology, which is to be held in Montevideo in November 1943. Interested ophthalmologists are asked to send their name and address together with the membership fee of \$5 to Dr. Conrad Berens, secretary-treasurer of the Pan American Congress of Ophthalmology, 411 First Avenue, New York.

FOREIGN

Paderewski Hospital Opened.—The Paderewski Hospital at Edinburgh, Scotland, has been opened, newspapers reported, December 7. The hospital has been established in connection with a medical school as part of the Polish Medical Center, Edinburgh, which has been in operation since March. A memorial to the late Ignace Jan Paderewski, pianist and Polish premier, the hospital will be open to Polish civilian refugees, to Polish soldiers in Scotland and, in an emergency, to the British public. The city of Edinburgh gave the building, and funds from the Paderewski Testimonial Fund in America have assisted in the expenses. The fund was started before Paderewski's death as a tribute on the occasion of the fiftieth anniversary of his American debut. Newspapers stated that, once Poland is free, the hospital will be transferred there.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 15, 1941.

The Mass Psychology Which Menaces the World

When Wilfred Trotter died in 1939 he was regarded as our greatest surgeon. But he had another title to fame; he was a philosopher. In 1908-1909 he contributed to the *Sociological Review* two essays on herd instinct, in which he questioned the accepted distinction between sociology and psychology. He argued that, as man was unknown as a solitary animal, every one must present the characteristics of a social animal or herd. He first dealt with instinct, which he defined as "inherited modes of reaction to bodily need or external stimulus." He distinguished three primary instincts: self preservation, nutrition and sex. But in gregarious animals, including man, he found a fourth instinct which modified and controlled these primary instincts. This he called the herd instinct. It was of three types: the aggressive, shown in the wolf and dog, the protective, shown in the sheep and deer, and the socialized, shown in the bee and ant. In the last the individual is completely absorbed into the major unit. Trotter held that the socialized type was the goal of man's development. Toward it his constantly growing altruism was directed. He expanded his essays into a famous book, which he published in 1916, entitled "Instincts of the Herd in Peace and War." As the extension of the original title shows, much that he wrote was inspired by the great war, then in progress. He gave to herd instinct a new importance in human psychology. He found in it the source of the individual's "opinions, credulities, disbeliefs and weaknesses." He wrote "Each one of us in his opinions, conduct, dress, amusement, religion and politics is compelled to be one of a class—the herd within the herd." Modern nations conformed to the herd types of the lower animals. Germany was "a perfect copy" of the wolf pack. "I am not intending to use a vague analogy," he said, "when I compare German society to the wolf, but to call attention to a real and gross identity. The psychic necessity which makes the wolf brave in a massed attack makes the German brave in a massed attack; the psychic necessity which makes the dog submit to his master's whip and profit by it makes the German submit to the lash of his officer and profit by it. . . . Such a people have no conception of the benign use of power but must regard war as an end in itself and peace as a somewhat irksome preparation for war."

All this was written in Trotter's book published twenty-five years ago. Today the *Times* gives, in its series of quotations under the caption "Old and True," the following extract from the book: "I admit to myself, quite frankly, my innermost conviction that the destruction of the German Empire is an indispensable preliminary to the making of a civilization tolerable by rational beings." This warning had no effect on our politicians, who would never dream that a surgeon, however eminent, or a philosopher, however acute, could provide any instruction of practical value on a political subject. A similar warning of the German peril given by a few public men, who included another philosopher, Frederick Harrison, the positivist, was ignored before the last great war. But now, as then, our enemies will find that they have made a mistake in relying on our normal aversion to militarism. If such warnings had been taken to heart how much suffering the world would have been saved! Trotter was by no means the only one among our public men who foresaw the danger, but no one dealt with it so scientifically and showed that it necessarily arose from the mass psychology of the Germans.

Is Alcohol in Any Sense a Food?

To a manual of scientific temperance teaching for the use of teachers and students, published by the Temperance Collegiate Association, Sir Frederick Gowland Hopkins, F.R.S., has contributed an essay on the relation of alcoholic beverages to nutrition. It is generally taught that as alcohol undergoes combustion in the body it acts as food. But Hopkins gives strong reasons for doubting this. Unlike our indispensable foods, alcohol disappears from the body in a few hours and cannot be stored. Its oxidation does not prove that it fulfils the functions of a food. Many deleterious substances are oxidized in the body and then eliminated. The energy liberated by the combustion of alcohol may well be unavailable for the support of any bodily function. Modern studies of the chemical events involved in muscular contraction give good reasons for doubting that alcohol can play a significant part in them.

These a priori considerations are supported by recent direct experiments which show that during work the oxidation of alcohol taken proceeds no faster than when the individual is completely at rest. Therefore the alcohol cannot have supplied energy for the work. In two young men whose diet and activities were carefully controlled, the rate of disappearance of alcohol from the body was studied for some hours when they were completely at rest. This rate was essentially the same on different occasions. Then the rate of disappearance was followed during bicycle riding, slowly for long periods or fast for shorter ones. The work did not increase the rate of disappearance of alcohol. It therefore could not have provided energy for the work done. The same result was obtained when the work was walking 20 miles over stiff country and in experiments on animals. The constancy of rate of combustion seems to be a device for protection rather than for utilization.

Even when no muscular work is done, heat derived from the combustion of food is necessary for maintaining the temperature of the body and the work of the internal organs. When the body is exposed to a low external temperature, combustion must increase to replace the heat lost through the skin. Can the combustion of alcohol supply any of this? Again, it was found that the combustion of alcohol was not quickened and so cannot meet the demand for greater heat production. Moreover, the dilating action on the cutaneous blood vessels increases the loss of heat. Therefore alcohol cannot protect against cold. Yet these two needs are just those which our non-nitrogenous foods characteristically supply. To suppose that alcohol can contribute in any direct sense to tissue growth would be absurd.

Insurance to Meet Hospital Bills

To encourage the formation of mutual insurance schemes which will assist the middle and professional classes to meet expenditure necessitated by illness necessitating specialist or surgical treatment undertaken in hospital pay beds or nursing homes, Lord Nuffield, famous for his munificent gifts to hospitals and medical education, has created a provident guaranty fund of \$750,000. This will be available for the purpose of guaranteeing the financial solvency of provident schemes. A condition is that the schemes shall be approved by the trustees of the fund and provide substantial cover for subscribers and members of their families on a contributory basis. Lord Nuffield's fund is available for areas outside London. In the London area King Edward's Hospital Fund has appointed a committee, under the chairmanship of Sir Bernard Docker, to sponsor a provident scheme to cater for the requirements of the middle and professional classes.

The Supply of Milk to School Children

More than 2,700,000 children obtain milk regularly in the public elementary schools. Nearly 600,000 are served twice daily with a third of a pint; the remainder get it once daily. Some 350,000 get the milk free; the rest pay 1 cent per third of a pint, which is only a third of the price paid by ordinary consumers at present. A demand that the scheme should be extended to other schools has been made, as the parents who prefer these schools are now paying as taxpayers for other people's children to have more milk than their own. The Ministry of Food would like to see the scheme extended, but financial considerations stand in the way. While the hardship is admitted, it is pointed out that the public elementary schools are open to all.

BUENOS AIRES

(From Our Regular Correspondent)

Sept. 15, 1941.

Center for Breast Milk in Buenos Aires

The Breast Milk Center of Buenos Aires is a public institute for the collection, storage and distribution of breast milk on a noncommercial basis. It has the same aims as have similar institutes in other countries and differs from the breast milk collecting depots which were established in Argentina about twenty years ago in that only the superfluous breast milk is collected; that is, the center is supplied not merely by wet-nurses. The women are periodically subjected to clinical, roentgenologic and serologic examination. The mother's own child is not deprived of milk as is sometimes the case in wetnurses. This institute is staffed with social workers, who keep in contact with the families of the donors as well as of the recipients and take interest also in problems of clothing and diet and if necessary secure financial and legal aid, hospitalization for mother and child, vaccination against smallpox and diphtheria and so on. The institute has demonstrated its value in the twelve years of its existence. In 1940 milk obtained from 346 women was distributed to 1,237 children. Of 5,300 liters collected during 1940 about 2,800 liters could be dispensed without charge. Depending on the economic conditions, the price per liter varies from nothing to 8 Argentine pesos (\$2.40).

Leprosy

According to E. M. Riveros, cases of leprosy have been observed in Colombia as follows: in 1936, 797 cases detected among 9,798 persons examined; in 1937, 834 among 31,279; in 1938, 767 among 31,268; in 1939, 654 among 55,633. The Asilo de Guadalupe, which admits healthy daughters of leprosy patients and has facilities for 250, was destroyed by fire in 1938 and its restoration has not been completed. San Bernardo can admit 400 children and 40 infants, another one 350 children and still another 100 children and 45 newborn infants. On May 1, 1940 these different institutes harbored 1,013 children. The state grants large subsidies to these institutions. The state has also had removed a large number of healthy children from the leprosariums; with financial support from the state they will remain under medical control up to the age of 15 years. From July 1938 to May 1940, 908 healthy children have been removed from the leprosariums; 532 were placed into the aforementioned asylums and 376 in families.

An analysis of the leprosy problem in the eastern provinces of Peru by M. H. Kuczynski-Godard and V. M. Pinedo demonstrates that the methods employed are inadequate. A well organized and medically well equipped rural colony is probably preferable to a hospital. In a first and cursory study of a district, 1.5 per cent of the population were found to have leprosy (44 cases).

According to Prof. V. Boettner (*Revista médica del Paraguay*, 1940) the state leprosarium of Paraguay at present has about

180 patients. Among the 140,000 patients admitted to the hospitals of Asunción from 1932 to 1936 there were 56 patients with leprosy. The number of leprosy patients in the army during the three year Chaco war was 78. The medical examination of the mobilized men during the war disclosed in all 187 cases of leprosy. Paraguay has no districts with a great concentration of leprosy. Boettner was able to detect 30 cases in his private practice.

The High Incidence of Circulatory Diseases

The Departamento Nacional de Higiene of Argentina reports a high incidence of cardiac and vascular diseases, which has been observed also in other countries. In Buenos Aires, for instance, with a population of 2.4 millions and a total mortality of 26,535, the fatalities from circulatory diseases were 26.9 per 10,000 inhabitants, or 23 per cent of the fatalities. These diseases are more frequent among men than among women, the ratio being 2 to 1; at the age level above 60 the ratio between the two sexes becomes equalized.

The report states further that in the United States the mortality from circulatory diseases is relatively lower than in Argentina and, in spite of this they present an economic burden of \$250,000,000, which is equivalent to 1,000 million Argentine pesos. The Departamento Nacional de Higiene estimates the burden for Argentina at 100 million Argentine pesos. The losses sustained by the pension fund owing to circulatory diseases go so far that of 514 persons who in 1940 wanted to take advantage of the pension funds 38.6 per cent intended to retire on account of circulatory diseases. The department attempts to remedy this problem by prophylactic measures. The large group of governmental employees is to be considered first. It has been suggested that, with the examination for tuberculosis, to which all governmental employees are to be subjected at five year intervals, an examination for circulatory diseases, especially for persons over 40, be combined. Persons in whom circulatory defects are discovered are, if possible, to be given other work more compatible with their state of health.

Personal

Guy Amerongen, a French industrialist who established a prize for the study of the interrelations between canned food and carcinogenesis but lost all of his possessions, is also seeking a new home in Argentina. The prize of 100,000 francs could not be distributed for twelve years. In 1939 the prize was awarded to Professor Roffo in recognition of a scientific contribution but was used by him to further the cultural relations between Argentina and France.

Dr. Mario Soto was appointed professor of pharmacology at the University of Buenos Aires. He will devote all his time to pharmacologic research and give up his clinical connections.

Prof. Aloysio de Castro, president of the academy of medicine in Rio de Janeiro and director of the general policlinic, has been given a doctorate honoris causa by the faculty of medicine in Buenos Aires.

Marriages

HASKELL WRIGHT FOX to Miss Ruby Lee, both of Greenville, Tenn., in Asheville, N. C., Oct. 16, 1941.

ELDON EDGAR SMITH, Canton, Ohio, to Miss Patricia Matthews at Ludington, Mich., in October 1941.

PAUL D. ZUBRITZKY, McKees Rocks, Pa., to Miss Ilaria Sterniuk of Plymouth, Sept. 23, 1941.

FREDERICK H. BOWEN to Miss Henrietta Baldwin, both of Jacksonville, Fla., Oct. 25, 1941.

CLARENCE E. UMPHREY to Miss Helen Isabel Trimm, both of Detroit, Nov. 1, 1941.

JOSEPH CLEMENT FLYNN, Cincinnati, to Miss Deirdre Driver of Tampa, Fla., recently.

Deaths

Austin Smith McKittrick @ Elyria, Ohio; Eclectic Medical Institute, Cincinnati, 1888; University of Wooster Medical Department, Cleveland, 1902; fellow of the American College of Surgeons; past president of the Hardin County Medical Society and the Lorain County Medical Society; for many years member of the board of education of Kenton, Ohio; a founder of and surgeon to a hospital bearing his name; formerly trustee of the Ohio Northern University, Ada; aged 78; surgeon to the San Antonio Hospital, Kenton, and the Memorial Hospital, where he died, Nov. 3, 1941, of pneumonia.

Ellen Smith Stadtmuller, San Francisco; University of California Medical Department, San Francisco, 1912; member of the California Medical Association and the American Academy of Pediatrics; clinical instructor in pediatrics at his alma mater; chief of child hygiene, state department of public health; assistant chief, communicable disease department, Children's Hospital from 1918 to 1922; instructor and medical inspector, State Teachers College, from 1920 to 1922; member of the advisory committee of the National Society for the Prevention of Blindness; aged 58; died, Nov. 25, 1941.

Edwin Forrest Yancey, Sedalia, Mo.; Missouri Medical College, St. Louis, 1882; member and from 1910 to 1920 vice president of the Missouri State Medical Association; fellow of the American College of Surgeons; formerly medical director of the Missouri-Kansas-Texas Railroad Company; formerly chief of staff of the John H. Bothwell Memorial Hospital; aged 83; died, Nov. 21, 1941, of carcinoma of the prostate.

William Michael Mehl @ Buffalo; University of Buffalo School of Medicine, 1904; chairman of the New York State Commission for the Blind; consulting ophthalmologist for the state department of labor; on the staffs of the J. N. Adam Memorial Hospital, Perrysburg, and the Charitable Eye, Ear, Nose and Throat Hospital; aged 64; died, Nov. 28, 1941, in the Buffalo General Hospital.

Roy Thomas Rodaway, Roanoke, Ill.; Bennett Medical College, Chicago, 1913; member of the Illinois State Medical Society; past president of the Woodford County Medical Society; on the staff of St. Francis Hospital, Peoria; served during the World War; county coroner; aged 54; died, Nov. 4, 1941, at his summer home in South Haven, Mich., of coronary disease.

Francis LeRoy Phillips @ Assistant Surgeon, Lieutenant (junior grade) United States Navy, Mare Island, Calif.; University of Southern California School of Medicine, Los Angeles, 1936; entered the navy in August 1936; on the staff of the United States Naval Hospital; aged 32; died, Nov. 17, 1941, in the United States Naval Hospital, Brooklyn.

Theodore Henry Lemmerz, Jersey City, N. J.; New York Homeopathic Medical College and Hospital, New York, 1896; fellow of the American College of Surgeons; member of the Medical Society of New Jersey; ophthalmologist and director of clinics, Christ Hospital; aged 71; died, Nov. 8, 1941, of carcinoma of the rectum.

William Henry Marsh, Solomons, Md.; University of Maryland School of Medicine, Baltimore, 1876; member of the Medical and Chirurgical Faculty of Maryland; formerly associated with the U. S. Public Health Service; aged 90; died, Nov. 12, 1941, in the United States Marine Hospital, Baltimore, of carcinoma of the lung.

Thomas Douglass @ Ozark, Ark.; Missouri Medical College, St. Louis, 1889; president of the Tenth Councilor District Medical Society and secretary of the Franklin County Medical Society; for many years chairman for the Red Cross in Franklin County; aged 73; died, Nov. 7, 1941, in a hospital at Fort Smith.

Albert Clinton Leach, Orange, Mass.; Dartmouth Medical School, Hanover, N. H., 1894; member of the Massachusetts Medical Society; member of the local board of health for many years; aged 70; died, Nov. 9, 1941, in the Farren Memorial Hospital, Montague City, of cerebral hemorrhage.

William Herbert Mason @ Murray, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; past president of the Calloway County Medical Society; aged 66; medical director of a hospital bearing his name, where he died, Nov. 23, 1941, of Hodgkin's disease.

Ernest Maxwell Vardon, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; member of the California Medical Association; on the

staff of the Queen of Angels Hospital; aged 71; died, Oct. 8, 1941, of retroperitoneal hemorrhage.

Douglas Hursh Vastine, Catawissa, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1923; member of the Medical Society of the State of Pennsylvania; aged 42; died, Nov. 14, 1941, in the Bloomsburg (Pa.) Hospital, of pneumonia and meningitis.

Robert Walker Hale, Thermopolis, Wyo.; Missouri Medical College, St. Louis, 1893; member of the Wyoming State Medical Society; formerly state senator and postmaster; at one time member of the state board of health; aged 72; died, Oct. 29, 1941.

Jim Hilliard Camp @ Pecos, Texas; University of Texas School of Medicine, Galveston, 1927; at one time instructor in anatomy at his alma mater; medical director of a hospital bearing his name; aged 39; was accidentally shot and killed, Nov. 16, 1941.

David Henry Davison, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1876; member of the Medical Society of the State of New York; aged 87; died, Nov. 22, 1941, in the Mount Sinai Hospital.

William August Kriesel, Little Rock, Ark.; Minneapolis College of Physicians and Surgeons, 1897; member of the Arkansas Medical Society; served during the World War; on the staff of the Missouri Pacific Hospital; aged 71; died, Oct. 30, 1941.

Allen Johnson, San Antonio, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1916; member of the State Medical Association of Texas; served during the World War; aged 51; died, Oct. 13, 1941, of cerebral hemorrhage.

Mavity J. Spencer, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1896; member of the Indiana State Medical Association; past president of the city board of health; formerly police surgeon; aged 70; died, Nov. 27, 1941, of coronary embolism.

Harry Thesdale Rosenthal, New York; University and Bellevue Hospital Medical College, New York, 1911; member of the Medical Society of the State of New York; on the staff of the Bronx Hospital; aged 54; died, Nov. 23, 1941, of coronary thrombosis.

Lloyd Henry Sarchet, Wellington, Kan.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1898; member of the Kansas Medical Society; city and county health officer; aged 69; died, Nov. 14, 1941, in St. Luke's Hospital.

Edgar Burton Probasco @ Glens Falls, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1898; fellow of the American College of Surgeons; attending surgeon Glens Falls Hospital; aged 71; died, Nov. 5, 1941.

William S. Prather, Americus, Ga.; University of Georgia Medical Department, Augusta, 1889; member of the Medical Association of Georgia; formerly owner of the Americus Hospital; aged 73; died, Nov. 12, 1941, of coronary thrombosis.

Jesse Grim, Los Angeles; Western Pennsylvania Medical College, Pittsburgh, 1904; served during the World War; formerly passed assistant surgeon in the United States Public Health Service reserve; aged 64; died, Nov. 20, 1941.

Frank R. Smiley, Boonville, Mo.; Beaumont Hospital Medical College, St. Louis, 1888; member of the Missouri State Medical Association; was a member of the board of education and county coroner; aged 81; died in November 1941.

Leon Charles Lewis, Kansas City, Mo.; University Medical College of Kansas City, Mo., 1901; member of the Missouri State Medical Association; served during the Spanish-American and World wars; aged 65; died, Nov. 10, 1941.

Howe R. Coleman Sr., Collierstown, Va.; Medical College of Virginia, Richmond, 1898; chairman of the county board of health and formerly chairman of the county school board; aged 69; died, Nov. 7, 1941, of coronary thrombosis.

Clarence Atwood Rose, Ardmore, Pa.; Jefferson Medical College, Philadelphia, 1913; member of the Medical Society of the State of Pennsylvania; on the staff of the Bryn Mawr (Pa.) Hospital; aged 61; died, Nov. 13, 1941.

Edmund A. Terrell, Fredericks Hall, Va.; Medical College of Virginia, Richmond, 1885; member of the Medical Society of Virginia; for many years surgeon for the Chesapeake and Ohio Railway; aged 81; died, Nov. 18, 1941, of arteriosclerosis.

Mace Anderson Losee, Livingstonville, N. Y.; Cornell University Medical College, New York, 1902; member of the

Medical Society of the State of New York; for many years health officer; aged 63; died, Nov. 9, 1941.

Walker L. Stumbo, Lackey, Ky.; University of Louisville Medical Department, 1907; member of the Kentucky State Medical Association; county sheriff; formerly county judge; aged 58; died, Nov. 13, 1941, in Martin.

David J. Conyers, Halls, Tenn.; Memphis (Tenn.) Hospital Medical College, 1897; bank president; aged 76; died, Nov. 22, 1941, in the John Gaston Hospital, Memphis, of injuries received in an automobile accident.

Warren Lee Hall, Nicholls, Ga.; University of Georgia Medical Department, Augusta, 1913; member of the Medical Association of Georgia; served during the World War; aged 52; died in November 1941.

Alfred Martin Sutton, San Diego, Calif.; University of London Faculty of Medicine, London, England, and M.R.C.S., England, 1885; aged 82; died, Oct. 8, 1941, of fractured right femur and arteriosclerosis.

Eugene Le Roy Kellum, Richmond, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1924; on the staff of the Grace Hospital; aged 43; was killed, Nov. 15, 1941, in an automobile accident.

Earl Hudson Turner Ⓢ Pampa, Texas; University of Texas School of Medicine, Galveston, 1934; aged 31; died, Oct. 12, 1941, as a result of injuries received in an accidental fall down an elevator shaft.

Baxter Rittenberry, Selma, Ala.; Birmingham Medical College, 1899; past president of the Dallas County Medical Society; aged 68; died, Nov. 19, 1941, of arteriosclerosis and cerebral hemorrhage.

Joseph Michel Arthur Valois, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1900; aged 66; died, Nov. 16, 1941.

Mitchell Lawrence Moran, St. Petersburg, Fla.; Georgetown University School of Medicine, Washington, D. C., 1935; member of the Florida Medical Association; aged 31; died, Nov. 22, 1941.

Charles Henry Wilson, New Brighton, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1906; aged 69; died, Nov. 1, 1941, in the Beaver Valley Hospital of carcinoma of the stomach.

Harvy Nally, Cainsville, Mo.; University of Missouri School of Medicine, Columbia, 1876; member of the Missouri State Medical Association; aged 86; died, Nov. 3, 1941, of coronary thrombosis.

Eugene Leffler Gilmore, Tallapoosa, Ga.; Marion-Sims College of Medicine, St. Louis, 1892; member of the Medical Association of Georgia; aged 72; died, Nov. 16, 1941, of septicemia.

K. Arvid Enlind, New York; College of Physicians and Surgeons, Baltimore, 1893; served during the World War; aged 68; died, Nov. 17, 1941, in the Veterans Administration Facility.

Robert Graham Contrell, New York; University of Pennsylvania Department of Medicine, Philadelphia, 1896; aged 68; died, Nov. 26, 1941, in Englewood, N. J., of carcinoma of the prostate.

Arthur Horton Mann Ⓢ Silver City, N. M.; University of Pennsylvania School of Medicine, Philadelphia, 1919; aged 48; died, Nov. 2, 1941, of lobar pneumonia and pulmonary tuberculosis.

James Stanley Gardner, Winnipeg, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1923; aged 44; died, Nov. 25, 1941, of herpes zoster and pulmonary tuberculosis.

Calvin H. Maust, Lecompton, Kan.; Central Medical College of St. Joseph, Mo., 1905; member of the Kansas Medical Society; aged 65; died, Nov. 4, 1941, in a hospital at Topeka.

David H. Thornton, Princeton, W. Va.; College of Physicians and Surgeons, Baltimore, 1893; aged 76; died, Nov. 19, 1941, in Roanoke, Va., of coronary sclerosis and hypertension.

Paul Alexander Johnstone Ⓢ Kansas City, Mo.; University Medical College of Kansas City, Mo., 1903; aged 75; died, Nov. 9, 1941, of coronary occlusion and pulmonary embolism.

Hartwell Blount Hyde, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1878; aged 88; died, Nov. 12, 1941, in the Davidson County Hospital of senility.

John William Smart, Cottontown, Tenn.; University of Tennessee Medical Department, Nashville, 1886; aged 80; died, Nov. 16, 1941, in the Protestant Hospital at Nashville.

Joseph M. Hale, Dearborn, Mo.; Ensforth Medical College, St. Joseph, 1891; member of the Missouri State Medical Association; aged 77; died, Nov. 10, 1941, in Kansas City.

Lawrence Miles Gwinn Ⓢ Denver; University of Colorado School of Medicine, Denver, 1913; on the staff of the Presbyterian Hospital; aged 53; died, Nov. 30, 1941.

Richard Churchill Travis Ⓢ Indianapolis; University of Michigan Medical School, Ann Arbor, 1925; served during the World War; aged 42; hanged himself, Nov. 23, 1941.

John Dana Robbins, Mount Ida, Ark.; Memphis (Tenn.) Hospital Medical College, 1902; member of the Arkansas Medical Society; aged 68; died, Oct. 29, 1941.

Charles Henry Walter, Oakland, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1894; served during the World War; aged 74; died, Nov. 22, 1941.

Milton Elliott Cannon, Riceville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1910; served during the World War; died, Nov. 28, 1941.

Charles J. Ross, Dover, Ark.; Memphis (Tenn.) Hospital Medical College, 1892; past president of the Pope County Medical Society; aged 74; died, Nov. 15, 1941.

George McGowan Stuart, Cupar, Sask., Canada; Manitoba Medical College, Winnipeg, Man., 1906; chairman of the public school board; aged 59; died, Oct. 28, 1941.

George Lewis Fuquay, Coats, N. C.; North Carolina Medical College, Charlotte, 1916; served during the World War; aged 49; died, Nov. 28, 1941.

Henry M. Kerzman, Detroit; Universität Bern Medizinische Fakultät, Switzerland, 1921; aged 53; died, Nov. 22, 1941, in the Harper Hospital.

Frederick David Brandenburg, La Farge, Wis.; Bellevue Hospital Medical College, New York, 1885; aged 79; died, Nov. 17, 1941, in La Crosse.

Joseph Thompson Graham, Draper, Va.; Medical College of Virginia, Richmond, 1923; aged 45; died, Nov. 29, 1941, in the Pulaski (Va.) Hospital.

John D. Wilson, Bowie, Texas; Memphis (Tenn.) Hospital Medical College, 1892; aged 78; died, Nov. 17, 1941, in the Bowie Clinic Hospital.

John Curtis Black, Bradenton, Fla.; University of Arkansas School of Medicine, Little Rock, 1911; aged 54; died, Nov. 26, 1941, in Corning, Ark.

John H. McCain Ⓢ Arcola, Ill.; University of Louisville (Ky.) Medical Department, 1891; aged 72; died, Nov. 24, 1941, of cerebral hemorrhage.

Lilla B. Wood, Reed City, Mich.; Saginaw (Mich.) Valley Medical College, 1901; aged 74; died, Nov. 26, 1941, in the Reed City Hospital.

William G. Mullarky, Huntington, W. Va.; State University of Iowa College of Medicine, Iowa City, 1887; aged 83; died, Nov. 14, 1941.

Jack Sawyer Shipp, Anniston, Ala.; Louisiana State University School of Medicine, New Orleans, 1940; aged 35; died, Nov. 16, 1941.

Francis Conrad Vogt Ⓢ Brooklyn; Long Island College Hospital, Brooklyn, 1900; aged 62; died, Nov. 19, 1941, of heart disease.

William Henry Hodges, Finger, Tenn.; University of Nashville Medical Department, 1898; aged 72; died, Nov. 16, 1941.

Theophile Hubert Wilson, Buffalo; Trinity Medical College, Toronto, Ont., Canada, 1900; aged 65; died, Nov. 30, 1941.

Robert Lee Justice, Haines City, Fla.; Medical College of Alabama, Mobile, 1894; aged 70; died in November, 1941.

J. Mills Boal, San Diego, Calif.; New York Homeopathic Medical College, New York, 1884; aged 85; died, Oct. 3, 1941.

Backus M. McIntyre, Winside, Neb.; John A. Creighton Medical College, Omaha, 1905; aged 70; died, Nov. 8, 1941.

William Riley Tanner, Lubbock, Texas (licensed in Texas, under the Act of 1907); aged 89; died, Nov. 13, 1941.

Charles Barber Ballard, Marietta, Ohio; Miami Medical College, Cincinnati, 1889; aged 80; died, Nov. 7, 1941.

Cyrus S. Keagy, Mill Shoals, Ill.; Missouri Medical College, St. Louis, 1889; aged 78; died, Nov. 19, 1941.

William A. Wilson, Detroit; Detroit College of Medicine, 1895; aged 71; died, Nov. 15, 1941.

Correspondence

PARALDEHYDE OR BENZYL ALCOHOL AS CAUSE OF FATALITY

To the Editor:—Since its introduction in obstetrics, paraldehyde has proved to be a valuable analgesic agent in labor. In addition to its excellent analgesic and amnesic properties, its usefulness has been greatly enhanced by the relaxation and sleep it affords the parturient patient between pains. Most physicians who have used this drug have been impressed with the wide margin of safety it enjoys over other commonly employed analgesics. In the hands of different obstetricians, and with varying technics of administration, it has been found to possess a high degree of safety for both mother and child. Hanson (*California & West. Med.* 47:191 [Sept.] 1937) has reported a case in which an overdose (120 cc.) of paraldehyde was given rectally during labor, with complete recovery of the mother and the delivery of a normal infant in good condition. Yet reports of 4 cases have appeared in the literature incriminating paraldehyde, either directly or indirectly, as the cause of maternal death. Paraldehyde may be exonerated at once in the first case, for three rectal instillations of formaldehyde were given by mistake instead of the intended paraldehyde medication (Kane, H. F.; Roth, G. B., and Mandy, T. E.: *Delaware State M. J.* 10:197 [Sept.] 1938).

Kotz, Roth and Ryon (*THE JOURNAL*, June 25, 1938, p. 2145) have attributed the death of their patient to an idiosyncrasy to paraldehyde. Although she became critically ill soon after receiving a single dose of 31 cc., death occurred only after cesarean section was performed. One may question, therefore, what the outcome might have been had a conservative course of treatment been followed.

Most recent is the report of Shoor (*THE JOURNAL*, Nov. 1, 1941, p. 1534). This author administered 12 cc. of paraldehyde and 6 cc. of benzyl alcohol to a primigravida aged 21 who had been in labor for about thirty-one hours. Three and one-half hours later she was found cyanotic and dyspneic and died following a generalized convulsion twenty-one and one-half hours after receiving the paraldehyde. The baby also died shortly after delivery, it too suffering generalized convulsions. Shoor, like Kotz, Roth and Ryon, attributed the maternal death to an idiosyncrasy to paraldehyde. It would appear unlikely that the fetus shared this "idiosyncrasy," but in view of both mother and child having undergone a similar mode of death a common cause of death seems reasonable. This, I believe, can be found in the benzyl alcohol. Used in conjunction with rectal instillations of paraldehyde, benzyl alcohol serves as a local surface anesthetic to the rectal mucosa. Kane and Roth (*THE JOURNAL*, Nov. 21, 1936, 107, p. 1710) have recommended a constant dose of 1.5 cc. When one of their patients was given, by mistake, 115 cc. of this drug, death ensued. Benzyl alcohol, which acts as a protein precipitant in the body, has been found lethal for mice, kittens and guinea pigs in doses of from 1 to 2 cc. per kilogram of body weight. When toxic amounts of this drug were injected into animals, convulsions often resulted (Macht, D. I.: *J. Pharmacol. & Exper. Therap.* 11:263 [April] 1918).

It is therefore submitted that Shoor's patient succumbed probably as a result of an excessive dose of benzyl alcohol, a substance of relatively high toxicity, rather than because of an idiosyncrasy to paraldehyde. Although reports of isolated cases exist in the literature, attributing fatal reactions to therapeutic doses of paraldehyde, there is no incontrovertible evidence that a single maternal death has ever resulted directly from the proper use of this valuable analgesic agent in obstetrics.

HAROLD SPEERT, M.D., St. Louis.

SUGGESTIONS FOR THE POSSIBLE CONTROL OF THE AMERICAN SUMMER ENCEPHALITIDES

To the Editor:—A recent editorial in *THE JOURNAL* (New Developments in Knowledge of Encephalitis, October 18, p. 136) reviews recent knowledge of certain "seasonal" encephalitides affecting man.

Since the outbreak in Paris, Ill., in 1932, epidemic summer encephalitis, epidemiologically not dissimilar to that occurring in the spring in Russia and to that of the late summer and autumn in Japan and Russia, has become increasingly important as a disease of man in the United States, Canada and Mexico. Approximately 3,000 cases were reported during the summer of 1941. At least three viruses may be responsible for the American outbreaks—that named for the St. Louis epidemic and those of the eastern and western types of equine encephalomyelitis. These three known American viruses are so closely related epidemiologically and clinically that the St. Louis infection should no longer be set apart from the so-called equine diseases either in name or in thought. For example, a large survey on serum neutralization made in the Yakima Valley, Washington, indicates that in this endemic area the western virus and the St. Louis virus infect, in approximately like proportions, horses and many other mammals and birds (Hammon, W. M.; Gray, J. A.; Evans, F. C.; Izumi, E. M., and Lundy, H. W.: *Western Equine and St. Louis Encephalitis Antibodies in the Sera of Mammals and Birds from an Endemic Area, Science* 94:305 [Sept. 26] 1941). Also intracerebral inoculation of horses with any of these viruses will produce encephalomyelitis (Cox, H. R.; Philip, C. B., and Kilpatrick, J. W.: *Susceptibility of Horses to St. Louis Encephalitis Virus, Pub. Health Rep.* 56:1391 [July 4] 1941). Furthermore, the same species of mosquitoes was found infected with both the St. Louis and the western equine viruses (Hammon, W. M.; Reeves, W. C.; Brookman, B.; Izumi, E. M., and Gjullin, C. M.: *Isolation of the Viruses of Western Equine and St. Louis Encephalitis from Culex Tarsalis Mosquitoes, Science* 94:328 [Oct. 3] 1941). Thus these three may be considered as one group in our discussion of general control measures.

Before the formulation and enforcement of control measures are seriously undertaken there should be a reasonably complete and well founded knowledge of the means of transmission and other important epidemiologic data. I shall briefly review the facts to see whether the profession has arrived at such a stage.

Mosquitoes were suspected as vectors of the eastern and western viruses, first on the basis of epidemiologic and then on laboratory evidence; both viruses have been repeatedly transmitted by *Aedes* mosquitoes in the laboratory (Davis, W. A.: *A Study of Birds and Mosquitoes as Hosts for the Virus of Eastern Encephalomyelitis, Am. J. Hyg.* 32:45, sec. C [Sept.] 1940). The St. Louis virus, at the time it was first recognized, was considered by one group of investigators to be spread by the respiratory tract (Leake, J. P.; Musson, E. K., and Chope, H. D.: *Epidemiology of Epidemic Encephalitis, St. Louis Type, THE JOURNAL*, Sept. 8, 1934, p. 728) and by others as mosquito borne (Casey, A. E., and Broun, G. O.: *Epidemiology of St. Louis Encephalitis, Science* 88:450 [Nov. 11] 1938. (Lumsden, L. L.: Unpublished official report). Japanese workers reported laboratory transmission with *Culex pipiens* (Mitamura, T.; Yamada, S.; Hazato, H.; Mori, K.; Hosoi, T.; Kitaoka, M.; Watanabe, S.; Okubo, K., and Temjin, S.: *Ueber den Infektionsmodus der epidemischen Enzephalitis: Experimentelle Untersuchungen über ihre Ansteckung durch Mücken, Tr. Jap. Path. Soc.* 27:573, 1937), but in the United States this transmission has not been confirmed (Fulton, J. D.; Greutter, J. E.; Muether, R. O.; Hanss, E. B., and Broun, G. O.: *Observations Concerning Culex Pipiens as a Possible Carrier of St. Louis Encephalitis, Proc. Soc. Exper. Biol. & Med.*

44:255 [May] 1940). During the summer of 1941 in the Yakima Valley both the St. Louis and the western viruses were repeatedly isolated from *Culex tarsalis* (Hammon, W. M.; Reeves, W. C.; Brookman, B.; Izumi, E. M., and Gjullin, C. M., to be published). Thus insect transmission of all three types seems to be rather well established, though the final evidence of demonstrating the ability to transmit for the particular mosquito found naturally infected is still lacking.

The finding of western equine and of St. Louis virus in nasal washings of experimental horses by Records and Vawter (Equine Encephalomyelitis Cross Immunity in Horses Between Western and Eastern Strains of Virus, Supplemental Report, *J. Am. Vet. M. A.* 39:773, 1935) and by Cox, Philip and Kilpatrick respectively and the ease of intranasal infection in the laboratory especially of the latter disease (Vawter, L. R., and Records E.: Respiratory Infection in Equine Encephalomyelitis, *Science* 78:41 [July 14] 1933) makes it unwise to deny the possibility of this route of infection altogether. The importance of finding virus in the nasal washings of 1 horse from an experimentally induced St. Louis infection (Cox, Philip and Kilpatrick) should not be exaggerated, for in our experiments the virus was readily found in the blood stream in 2 horses during inapparent infections and could not be detected in the nasal washings (Hammon, W. M.; Carle, B. N.; Izumi, E. M., and Britton, J. W.: St. Louis Encephalitis in the Horse, to be published). Thus accumulated epidemiologic and laboratory evidence points strongly to the greater importance of transmission by insects.

Conclusive evidence now indicates that these viruses are widespread in smaller animals, the eastern type having been isolated from three species of birds and the western type from a prairie chicken (Cox, H. R.; Jellison, W. L., and Hughes, L. E.: Isolation of Western Equine Encephalomyelitis Virus from a Naturally Infected Prairie Chicken, *Pub. Health Rep.* 56:1905 [Sept. 26] 1941). Preliminary tabulation of results of neutralization tests on about 300 serums from mammals and birds in the Yakima Valley, Washington (Hammon, Gray, Evans, Izumi and Lundy), now controlled by a series of about 150 bloods from non-encephalitis areas, indicates that approximately 50 per cent of all domestic animals from this endemic area as well as about 12 per cent of the sampled members of wild species are infected at some time with both the St. Louis and the western virus (Hammon, Gray, Evans, Izumi and Lundy). This widespread infection occurs in most instances without any apparent epizootic except in horses.

Reports of the disease in horses and man, frequent instances of the isolation of the viruses and serologic tests give data of a useful nature regarding the geographic distribution of the infections and suggest that new areas are being involved each year and that the disease is reappearing in areas apparently free from it for long periods of time. The western virus has now been reported from every state west of the Mississippi River and from about three fourths of all counties within these states, as well as in numerous areas east of this line. Mass vaccination of horses, though partly responsible for fewer total cases in this species since 1938, has not checked the apparent spread. Since knowledge of the St. Louis virus has until now been limited to its recognition in human beings, less is known of its distribution, but such evidence as is available suggests that it is present in many areas of both the East and the West. The eastern infection appeared for a time to be limited to the area east of the Appalachian Mountains but in 1940 was found in Alabama and in 1941 in several parts of Texas. In the Rio Grande Valley during the summer of 1941 I obtained serologic evidence of both eastern and western virus infections in nonfatal cases in man and of all three types in horses.

With this knowledge of the means of transmission and of the apparent spread and distribution, it would seem that physicians

are now ready to face the important problem of what they can and will do about it. The large irrigated areas of certain Western states are known to offer ideal conditions for annual epidemics. The eastern type virus is by far the most dangerous to horse and man and seems to be rapidly moving westward and may appear next year or the year after in the great San Joaquin and Sacramento valleys of California and in other similar areas, where it can be expected to become endemic. Can it be prevented from doing so? Can it be prevented from entering the Dakotas and the great Northwest, including portions of Canada? Can it be prevented from recurring in Massachusetts and other eastern areas? In areas of the Western and Central states in which the western virus is now firmly established, can the disease be controlled? Can the three viruses now present in Texas on the Gulf Coast and the lower Rio Grande Valley, first observed in man in 1941, be prevented from causing epidemics in the large concentrations of Army and Navy personnel located in these areas?

I shall consider the more probable means of spread from one area to another: 1. The shipment of domestic animals just after natural infection could result in mosquito infection at any point at which these animals might be delivered from one to six days after shipment, given the vector and other suitable environmental conditions. This is evident from the fact that inoculation of birds and small mammals in the laboratory by the subcutaneous or intracutaneous route (similar to insect inoculation) or by intracerebral inoculation results in the virus circulating in the blood during some period from twelve to ninety-six hours after inoculation (Ten Broeck, Carl: Birds as Possible Carriers of the Virus of Equine Encephalomyelitis, *Arch. Path.* 25:759 [May] 1938. Howitt, B. F.: Comparative Susceptibility of Wild and Domestic Birds and Animals to the Western Virus of Equine Encephalomyelitis (Br. Strain) in California, *J. Infect. Dis.* 67:177 [Nov.-Dec.] 1941. Davis). In horses it may appear as late as six days after inoculation (Records and Vawter). 2. Given an infected mosquito, the possibility of its transportation by airplane, train, automobile or boat must be considered. 3. Migratory birds in an area such as the lower Rio Grande Valley, in which the infection occurs in horses as early as March, might become infected just before beginning flight northward and serve to infect mosquitoes at certain places where the birds temporarily rest.

To counteract these three possible methods of spread, the following might be considered: 1. A quarantine period for domestic animals shipped during the summer from known infected areas. This should be of about four days for small and six days for large animals and would have to be in mosquito protected quarters. There is no evidence at present to indicate a prolonged carrier state in any except an arthropod host, so there is no justification for a prolonged quarantine period. 2. Mosquito inspection and spraying are now practiced in yellow fever and malaria areas for air, water and land vehicles and could be applied to encephalitis areas. California already has entomologic inspection stations at important points of entry to the state, and these agricultural protective measures might be extended to protect man and horses from the highly fatal eastern encephalomyelitis virus. 3. Migratory birds would still jeopardize the situation even if these other measures were put into effective practice. Outside of extermination of these, a thought that can be dismissed entirely, intense local control measures in infected areas, to be considered later, would reduce the likelihood of birds becoming infected in southern endemic regions.

Undoubtedly a carefully planned and well correlated program which envisions the problem as a national or international one, rather than one of states or counties alone, could change the natural course of events.

Not less important, and not unrelated, is the question of local control where one or more of these viruses is now established.

When one considers the vast extent of the reservoir and the difficulties involved in complete elimination of mosquitoes in irrigated areas, it is obvious that the problem is somewhat similar to that of sylvatic plague—to learn how best to live with it rather than how to eradicate it. The following possibilities are pointed out:

1. As soon as the particular arthropod vector or vectors of the region are incriminated, and immediate steps should be taken to do so, their control should be considered. In most instances at least partial control will be practicable. If *Culex tarsalis* is the vector, however, owing to its ability to breed under such varied conditions, its effective control in certain areas will be entirely impracticable. Careful screening of homes and avoidance of mosquito infected areas during the hours when they customarily bite will offer partial protection. Those persons who, because of occupation, cannot remain indoors at these hours should wear protective clothing and use repellants, of which reasonably satisfactory types are now available.

2. Vaccination of man is being practiced on a small scale at present and deserves careful evaluation. Vaccination of horses for both the eastern and the western virus has proved highly effective. It is practicable for these animals because the morbidity rate without vaccination is usually about 10 per cent and the fatality rates are from 30 to 90 per cent. If an occasional horse dies or suffers a severe reaction from vaccination, it is relatively unimportant. In man, however, morbidity rates in the reported outbreaks (reports incomplete for 1941) have ranged from less than 1 to a maximum of about 150 per hundred thousand for a county or up to 500 per hundred thousand for a smaller political subdivision. Mortality has varied from 3 to 30 per cent in the western and St. Louis outbreaks. Let us consider how many persons would require vaccination for each life saved in what is considered a severe and unusual outbreak. Had the outbreak in St. Louis County and City in 1933 (morbidity rate 100 per hundred thousand and case fatality rate 20 per cent) been predicted and a perfect vaccine been available, for each life saved 5,000 persons would have been vaccinated. In an area such as the Yakima Valley, where annual vaccination of the population might be considered, because the disease appears annually, over the last three years for each life saved 13,900 vaccinations would have been performed. Until the outbreak involving the Dakotas in 1941, the morbidity rates in this area have been higher than anywhere else in the United States. Since at least two viruses are present in the area, double vaccination would probably have been necessary. In the most heavily infected counties of the San Joaquin Valley of California, much greater numbers would require vaccination for each life one would expect to save. Moreover, in this area the migratory population most needing vaccination would present an extremely difficult administrative problem. Most epidemics, however, are not predictable and, when recognized and the virus or viruses responsible identified in the laboratory, the time for vaccination to be effective would probably have passed. Since man is an unimportant reservoir, vaccination of a part of a population would not appreciably decrease the chance of infection for the unvaccinated group, as it does in smallpox. Some untoward reactions can be expected in every few thousand vaccinations, including the possibility of death, as is the case with any vaccine now used on human beings and with these specific vaccines when used on horses. Thus it would seem premature to recommend general vaccination of man in epidemic or endemic areas and not advisable, unless morbidity rates increase greatly above those so far reported, to compare with those rates encountered in certain communities in Russia, where vaccination is practiced for their spring, tick-borne encephalitis. There, in one community in which there were unvaccinated controls, it appears that 1 life was saved for every group of 267 persons vaccinated. Selected groups of heavily exposed persons, prob-

ably on an occupational basis, such as certain laboratory workers or agricultural workers, might well be immunized. This is now being practiced for the eastern and western viruses with reasonably good evidence that it is effective (Beard, D.; Finkelstein, H., and Beard, J. W.: Repeated Vaccination of Man Against the Virus of Equine Encephalomyelitis, *J. Immunol.* 40:492 [April] 1941). However, vaccination must be repeated yearly. At present no vaccine is available for the St. Louis infection.

3. Zoning restrictions to eliminate domestic stock and fowls from cities, suburban areas and small towns would undoubtedly be an effective measure in reducing human morbidity rates and deserves serious and immediate consideration. The distribution of the human disease and the preponderance of infection in domestic animals present strong evidence pointing to close association of man with a concentrated population of domestic animals as an essential to a high morbidity rate. In large cities, where zoning regulations are now enforced, despite the large human population few cases occur, and these can usually be traced to exposure elsewhere (Hammon, W. M., and Howitt, B. F.: Epidemiological Aspects of Encephalitis in the Yakima Valley, Washington: Mixed St. Louis and Western Equine Types, *Am. J. Hyg.*, to be published). Such control measures, although they will result in certain hardships on persons engaged in raising poultry or keeping stock of any kind in residential districts, are practicable and would undoubtedly be highly effective.

4. Animals that would be difficult to eliminate, such as dogs, and all animals in areas in which owners of small tracts live under conditions closely simulating rural towns could probably be prevented from serving as reservoirs of virus by vaccination. Technics and vaccines would have to be developed, but this could be readily accomplished. In cases in which placental or colostrum transmitted antibodies cannot play a role, the young of each species—especially fowl—would require vaccination soon after birth and thus make vaccination expensive and annoying to the farmer.

5. Robins, pheasants, quail and a few other species of wild life have high infection rates and may well serve to infect mosquitoes in areas inhabited by man. The wild life group and sportsmen should gradually familiarize themselves with the facts and realize that something should be done about it. Probably, however, by controlling the domestic reservoirs the infection rate in mosquitoes and, in turn, in these wild birds will be greatly reduced. It would seem wise, however, to discontinue heavy planting of pheasants and perhaps certain other game in endemic areas. In the Yakima Valley, fourteen thousand pheasants a year are being released, and those caught in this area appear to have an infection rate approaching 50 per cent.

The control measures outlined, both for preventing the entry of a new virus and for the control of those already present, are offered at this time only as suggestions. Some of the evidence on which they are based may yet be shown to be in error or only part of the truth. Some are more or less impracticable from the administrative standpoint. Some are warranted in one area and not in another. It has been my purpose to impress those responsible for the prevention and control of disease, and those who might serve to influence them, with the immediate and pressing importance of the situation and to outline briefly the measures that could be employed, based on our present knowledge. An attempt has been made to evaluate some of these procedures. The situation has grave potentialities, threatening both civilian and military horses and personnel. It is increasing yearly in importance, and prompt, intelligent action can undoubtedly change the course of events.

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Council on Medical Education and Hospitals

CONTINUATION COURSES FOR PRAC- TICING PHYSICIANS

In accordance with the plan of the Council on Medical Education and Hospitals, advance information concerning continuation courses for practicing physicians available in the various centers is published quarterly. The following list of courses is presented for the period Jan. 1 to April 30, 1942. It is

hoped that this material will be of value to the practicing physician who may be planning to take postgraduate work but who does not have at hand a ready means of knowing when and where the subjects in which he is interested will be taught. It is urged that those who contemplate enrolling in any of these courses communicate as early as possible with the executive officer named in the following list as the size of classes is in many cases necessarily limited.

WILLIAM D. CUTTER, M.D.,
Secretary, Council on Medical
Education and Hospitals.

Continuation Courses for Practicing Physicians—January 1 to April 30, 1942

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
ALLERGY					
Washington University School of Medicine and Barnes Hospital, St. Louis	April 6	2 weeks	68 ¹	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Faculty of Medicine of Columbia University	April 13	3 weeks	48	\$150	Dean of the School of Medicine, Columbia University, 630 West 168th St., New York City
Roosevelt Hospital, New York ...	February 2	2 weeks	68 ¹	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Graduate School of Medicine, University of Pennsylvania	Arranged on application	4 weeks, 40 hours	... ..	\$150	Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia
ANATOMY					
College of Medical Evangelists	Arranged on application	3 to 10 hours; elective subcourses	.....	\$5 to \$15	Chairman, Committee on Postgraduate Education, 312 N. Boyle Ave., Los Angeles
University of Illinois College of Medicine	Arranged on application	Variable	4 or more	\$75 a semester plus cost of materials	Assistant to the Dean, University of Illinois College of Medicine, 1833 W. Polk St., Chicago
New York Medical College . . .	Arranged on application	60 to 100 hours (surgical anatomy)	1 or more	\$150 to \$250	Dean, New York Medical College, 5th Ave. at 105th St., New York City
ANESTHESIA					
Harvard Medical School, Courses for Graduates	Arranged on application	1 month	3	\$30 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Faculty of Medicine of Columbia University	Arranged on application ³	2 or 3 weeks	.....	\$100 to \$150	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Polyclinic Medical School and Hospital	Arranged on application	6 week and 3 month courses	... ..	\$150 to \$400	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
New York University College of Medicine	Spring	3 weeks (inhalation)	5	\$150	Assistant Dean, New York University College of Medicine, 477 First Ave., New York City
		3 weeks, mornings or full time (regional)	... ..	\$200	
ARTHRITIS					
Tufts Medical School, Postgraduate Division	March 2	6 days	.....	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
The Mayo Foundation, University of Minnesota and The Mayo Clinic, Rochester	April 13	1 week	20-35 ¹	\$20	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Faculty of Medicine of Columbia University	March 2	5 days	4 or more	\$35	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
AVIATION MEDICINE					
George Washington University School of Medicine	February 5	3 days	.....	\$35	Professor of Ophthalmology, George Washington University School of Medicine, 1335 H St., N.W., Washington, D. C.
BACTERIOLOGY					
Faculty of Medicine of Columbia University	January; February	1 month, mornings; part time courses	38	\$50	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
BRONCHO-ESOPHAGOGY					
Harvard Medical School, Courses for Graduates	Arranged on application	2 weeks (bronchoscopy)	.....	\$150 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Faculty of Medicine of Columbia University	Arranged on application	3 weeks	.....	\$250	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
Temple University School of Medicine	March 16	2 weeks	.....	\$250	Dean, Temple University School of Medicine, 3400 N. Broad St., Philadelphia
Graduate School of Medicine, University of Pennsylvania	January	2 weeks, 85 hours	... ..	\$250	Dean, Graduate School of Medicine, University of Pennsylvania, 36th and Pine Sts., Philadelphia
CARDIOLOGY					
College of Medical Evangelists.....	January 4	30 hours arranged	5-10	\$50	Chairman, Committee on Postgraduate Education, 312 N. Boyle Ave., Los Angeles
Massachusetts General Hospital and House of the Good Samaritan, Boston	February 2	2 weeks	20-30 ¹	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Jewish Hospital, Brooklyn (Joint Committee on Post-Graduate Education)	January 13	5 weeks, 3 mornings a week	6	\$20	Registrar, Joint Committee on Post-Graduate Education, 1312 Bedford Ave., Brooklyn
	April 7	5 weeks, 3 mornings a week (includes applied electrocardiography)	12	\$20	

Continuation Courses for Practicing Physicians—January 1 to April 30, 1942—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
CARDIOLOGY—Continued					
Faculty of Medicine of Columbia University	April 6	4 weeks	10 or more	\$100	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Medical College.....	Arranged on application	8 weeks, twice a week (includes electrocardiography)	.....	\$100	Dean, New York Medical College, 5th Ave. at 105th St., New York City
DERMATOLOGY					
Harvard Medical School, Courses for Graduates	February; April	1 month, mornings	Limited	\$40 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
	Arranged on application	2 months, twice a week (clinical mycology)	6	\$50 ²	
Tufts Medical School, Postgraduate Division	January 19	6 days	6 or more	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Faculty of Medicine of Columbia University	Arranged on application	6 weeks or 3 months, 3 afternoons a week	3	\$40; \$75	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	Arranged on application ²	3 months or more, 3 sessions a week (histology)	12	\$75 to \$175	
		6 weeks or 3 months, 3 sessions a week (surgical)	2	\$40; \$75	
		6 weeks or 3 months, 3 sessions a week (mycology)	.....	\$40; \$75	
DIABETES					
Tufts Medical School, Postgraduate Division	January 19	6 days	.....	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Faculty of Medicine of Columbia University	March 9	5 days	4 or more	\$35	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
Graduate School of Medicine, University of Pennsylvania	Arranged on application	2 to 4 weeks, 75 hours	.....	\$150	Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia
ELECTROCARDIOGRAPHY					
Tufts Medical School, Postgraduate Division	January 26	3 days (advanced course)	.....	\$20 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Faculty of Medicine of Columbia University	April 7	4 weeks, twice a week (fundamentals)	4 or more	\$50	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
ENDOCRINOLOGY					
Jewish Hospital, Brooklyn (Joint Committee on Post-Graduate Education)	April	5 weeks, twice a week	4	\$20	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
Faculty of Medicine of Columbia University	February 2	8 weeks, 3 afternoons a week (discusses of metabolism)	6 or more	\$40	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	March 16	2 weeks	6 or more	\$50	
New York Medical College.....	Arranged on application	4 weeks, 36 hours	.....	\$100	Dean, New York Medical College, 5th Ave. at 105th St., New York City
FORENSIC MEDICINE					
New York University College of Medicine	Arranged on application	1 month or more	.....	\$25 to \$100	Assistant Dean, New York University College of Medicine, 477 First Ave., New York City
GASTROENTEROLOGY					
University of Chicago, The School of Medicine, Billings Hospital	April 6	2 weeks	30-75 ¹	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
	Arranged on application	2 week and 3 month courses in gastroscopy	3; 1	\$100 to \$150	Dean of Students, University of Chicago, The School of Medicine, Chicago
Tufts Medical School, Postgraduate Division	February 9	6 days	.....	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Greenpoint Hospital, Brooklyn (Joint Committee on Postgraduate Education)	February 2	6 weeks, twice a week	4	\$10	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
Jewish Hospital, Brooklyn (Joint Committee on Postgraduate Education)	April 7	4 weeks, twice a week	8	\$10	
Faculty of Medicine of Columbia University	Arranged on application ²	2 months, 3 afternoons a week (gastroscopy)	1	\$200	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	April 6	4 weeks	10 or more	\$100	
New York Medical College.....	Arranged on application	10 sessions (gastroscopy)	.....	\$100	Dean, New York Medical College, 5th Ave. at 105th St., New York City
New York Polyclinic Medical School and Hospital	January 2; April 1	6 weeks	.....	\$75 to \$100	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
Hahnemann Medical College and Hospital	Arranged on application	1 month or more	.....	Varies	Head of Department of Gastroenterology, Hahnemann Medical College, Philadelphia
Graduate School of Medicine, University of Pennsylvania	Arranged on application ²	16 weeks, 500 hours	.....	\$400	Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia
Graduate Hospital, University of Pennsylvania, Philadelphia	February 2	6 days	20-48 ¹	\$20	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
GYNECOLOGY—See also under Obstetrics					
Faculty of Medicine of Columbia University	January	Various courses throughout year	Limited	\$40 to \$300	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Polyclinic Medical School	Arranged on application	6 weeks	.....	\$75	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
INDUSTRIAL MEDICINE AND SURGERY					
Faculty of Medicine of Columbia University	February 2	2 weeks	.....	\$60	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City

Continuation Courses for Practicing Physicians—January 1 to April 30 1942—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
LARYNGOLOGY—See also Otolaryngology					
Harvard Medical School, Courses for Graduates	Arranged on application February 16	5 exercises (resection of nasal septum) 6 weeks (anatomy)	Limited	\$75 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Graduate School of Medicine, University of Pennsylvania	Arranged on application	10 days 20 hours (operations on cadaver)	Limited	\$250 ²	Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia
	January	2 weeks (laryngeal surgery)		\$250	
MEDICINE—General Medical and Surgical Subjects					
Tuskegee Institute, Ala	April	1 week (clinics for Negro physicians)		\$5	Medical Director, John A. Andrew Memorial Hospital, Tuskegee Institute, Ala
University of California Medical School and Stanford University School of Medicine	February 2	2 weeks	20 or more ¹	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Midwinter Postgraduate Clinics, Denver, Colorado	February 19	3 days		\$5	Executive Secretary, Colorado State Medical Society, 337 Republic Building, Denver
University of Kansas School of Medicine	March 30	4 days		\$50	Chairman, Postgraduate Courses, University of Kansas School of Medicine, 90th St. and Rainbow Blvd., Kansas City, Kan
New Orleans Graduate Medical Assembly	March 2	5 days		\$10	Secretary, New Orleans Graduate Medical Assembly, 1430 Tulane Ave., New Orleans
St. Louis Clinics	March	4 days		\$10	St. Louis Clinics, 3830 Lindell Blvd., St. Louis
New York Polyclinic Medical School and Hospital	Arranged on application	6 weeks		\$100	Medical Executive Officer, New York Polyclinic Medical School, 355 W. 30th St., New York City
Eighth Post Collegiate Assembly, Ohio State University	March 5	3 days		\$2 to \$5	Dean, College of Medicine, Ohio State University, Columbus
University of Oregon Medical School, Alumni Association	March 22	7 days		Not available	Dean, University of Oregon Medical School, 3181 S.W. Marquam Hill Road, Portland
Seventh Annual Postgraduate Institute Philadelphia County Medical Society	April 13	5 days		\$5	Director, Seventh Annual Postgraduate Institute, 301 S. 21st St., Philadelphia
Fourteenth Annual Spring Clinical Conference, Dallas Southern Clinical Society	March 23	4 days		Not available	Secretary, Dallas Southern Clinical Society, 1131 Medical Arts Bldg., Dallas
Sixth Annual Post Graduate Assembly for Negro Physicians, Prairie View, Texas	March 2	4 days		\$50	Executive Secretary, Texas Tuberculosis Association, 700 Brazos, Austin
University of Wisconsin Medical School	April 18	1 week		\$10	Dean, University of Wisconsin Medical School, Madison
MEDICINE, INTERNAL					
University of California Medical School	January 5	3 days (drug therapy)		\$70	Director of Refresher Courses, c/o Dean's Office, University of California Medical School, San Francisco
Tulane University of Louisiana Department of Graduate Medicine	January 5 February 18	6 weeks (review course)		\$150	Director of Graduate Medicine, Tulane University of Louisiana, 1430 Tulane Ave., New Orleans
West Baltimore General Hospital	1st of each month	3 months 8 hours a week		\$30 to \$125	Director, Postgraduate Training, West Baltimore General Hospital, Rayner and Dukeland Aves., Baltimore
University of Maryland School of Medicine, Johns Hopkins University School of Medicine	February 2	2 weeks (chemotherapy, hematology, nutrition, endocrinology)	20 to 1	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Harvard Medical School, Courses for Graduates	April 1	1 month or more		\$150 a month ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
	Monthly	Varies (endoscopy)	2	Varies	
University of Minnesota Medical School	April 6	2 weeks	30 to 1	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Bellerue Hospital (New York University College of Medicine)	1st of each month	1 month, mornings	6 to 12	\$50	Director, Fourth Medical Division, Bellerue Hospital, 86th St. and East River, New York City
Faculty of Medicine of Columbia University	February 16	5 days (chemotherapy and vitamins)	4 or more	\$25	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	January 5, April 6	1 or 2 months, daily	4 to 10	\$125 or \$200	
	January 19	2 weeks (diagnostic procedures)	4 to 10	\$50	
New York Medical College	Arranged on application	8 weeks, twice a week (physical diagnosis and hematology)		\$100	Dean, New York Medical College, 5th Ave. at 104th St., New York City
		10 hours (peritoneoscopy)		\$75	
NEUROLOGY AND PSYCHIATRY					
Colorado Psychopathic Hospital (Colorado State Medical Society)	February 16	3 days	20	\$10	Executive Secretary, Colorado State Medical Society, 337 Republic Building, Denver
University of Illinois College of Medicine	Arranged on application	Seminars in psychiatry	Limited	Not available	Assistant to the Dean, University of Illinois College of Medicine, 1553 W. Polk St., Chicago
Harvard Medical School, Courses for Graduates	April 14	6 weeks, 3 mornings a week (neuropathology)	Limited	Arranged	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Faculty of Medicine of Columbia University	April 6	1 month	4 to 6	\$100	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	Arranged on application	1 month or more, afternoons (clinical neurology)	6	\$50 a month	

Continuation Courses for Practicing Physicians—January 1 to April 30, 1942—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
NEUROLOGY AND PSYCHIATRY—Continued					
Graduate School of Medicine, University of Pennsylvania	Arranged on application ⁴	10 weeks, 250 hours	.	\$100	Dean, Graduate School of Medicine, University of Pennsylvania, 26th and Pine Sts., Philadelphia
	Arranged on application	8 weeks, 240 hours	.	\$100	
OBSTETRICS					
The Chicago Maternity Center ..	January	4 months	.	\$10	Medical Director, The Chicago Maternity Center, 1336 S. Newberry Ave., Chicago
University of Chicago, The School of Medicine	January 12, February 9; March 9, April 13	4 weeks	7	\$25	Postgraduate Course, Department of Obstetrics and Gynecology, 5948 Drexel Ave., Chicago
University of Illinois College of Medicine	Every other week	2 weeks (includes pediatrics)	4	\$10 ⁵	Assistant to the Dean, University of Illinois College of Medicine, 1833 W. Polk St., Chicago
	Arranged on application	Obstetrics and gynecology in preparation for board examinations	Limited	Arranged	
Indiana University Medical Center	January 12, April 13	2 weeks	6	\$10 ⁶	Department of Postgraduate Education, Indiana University Medical Center, Indianapolis
State University of Iowa College of Medicine	Every other week	6 days	4	No	Associate in Obstetrics and Gynecology, University Hospitals, Iowa City, Ia
Louisiana State University School of Medicine	Quarterly	2 weeks		\$75 ⁷	Supervisor, Maternal and Child Health Services, Department of Health, Civil Courts Building, New Orleans
Tulane University of Louisiana Department of Graduate Medicine	February 18	6 weeks (review course, includes gynecology)		\$150	Director, Department of Graduate Medicine, Tulane University of Louisiana, 1430 Tulane Ave., New Orleans
Harvard Medical School, Courses for Graduates	Monthly	1 month or more	6	\$125 ⁸	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
University of Michigan Medical School	Every other week	2 weeks	4	No	Director, Bureau of Maternal and Child Health, Michigan Department of Health, Lansing
University of Nebraska School of Medicine	Every other week	2 weeks (includes gynecology and pediatrics)	.	\$10	Director of Maternal and Child Health, State Department of Health, Lincoln
Margaret Hague Maternity Hospital, Jersey City (Faculty of Medicine, Columbia University)	1st of each month	1 to 3 months	24	\$100 to \$350	Medical Director, Margaret Hague Maternity Hospital, 68 Clinton Pl., Jersey City, N. J.
New York Polyclinic Medical School and Hospital	April	2 months	.	\$250	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
Duke Hospital, Durham	Weekly	5 days (includes pediatrics)		No ⁶	Assistant State Health Officer, State Board of Health, Raleigh, N. C.
University of Oklahoma School of Medicine	Arranged on application	15 days	6	\$25	Dr. Edward N. Smith, Associate Professor of Obstetrics, 800 N. E. 13th St., Oklahoma City
University of Oregon Medical School	January 19	5 days (includes gynecology)	.	Not available	Dean, University of Oregon Medical School, 3151 S. W. Marquam Hill Road, Portland
Medical College of the State of South Carolina	Every other week	2 weeks (includes pediatrics)	4	\$50 ⁹	Dean, Medical College of the State of South Carolina, Charleston
OPHTHALMOLOGY—See also Otolaryngology					
George Washington University School of Medicine	January 26	6 days (surgery, pathology, orthotics)	30	\$100	Professor of Ophthalmology, George Washington University School of Medicine, 1335 H St., N.W., Washington, D. C.
	February 2	3 days	.	\$35	
University of Illinois College of Medicine	2d semester	4 months (pathology of the eye)		\$75 plus cost of materials	Assistant to the Dean, University of Illinois College of Medicine, 1833 W. Polk St., Chicago
Harvard Medical School, Courses for Graduates	January 5; on arrangement	3 weeks, mornings or 1 month, afternoons	Limited	\$80 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
	Arranged on application	3 months, daily (refraction)	Limited	\$300 ²	
	February 16	2 weeks (clinical pathology)	20	\$75 ²	
	March 2	3 weeks, mornings (neuro ophthalmology)	8	\$40 ²	
	March 23	4 weeks, 3 mornings a week (ophthalmoscopy)	Limited	\$60 ²	
		4 weeks, 3 mornings a week (clinical)	Limited	\$50 ²	
	April 20	4 weeks, part time courses	8	\$40 ²	
Tufts Medical School, Postgraduate Division	February 2	4 weeks, 4 mornings a week (ophthalmoscopy)	3	\$50 ²	Chairman, Postgraduate Division Tufts Medical School, 30 Bennett St., Boston
	March 2 ³	3 months, mornings (refraction)	.	\$150 ²	
	Monthly	3 mornings a week	Limited	\$50 ²	
Faculty of Medicine of Columbia University	Arranged on application ³	15 sessions (embryology, histology, pathology)	1 or more	\$70	Dean of the School of Medicine, Columbia University, 630 W. 16th St., New York City
	March 2 ³	4 successive courses of 5-6 days	35	\$25 to \$60 a course	

Continuation Courses for Practicing Physicians—January 1 to April 30, 1942—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
OPHTHALMOLOGY—See also Otolaryngology—Continued					
Graduate School of Medicine, University of Pennsylvania	Arranged on application	2 or 3 weeks (operations on cadaver) 8 weeks (refraction) 8 weeks (histology and pathology)	..... ..... .....	\$100 to \$270 \$270 \$200	Dean, Graduate School of Medicine, University of Pennsylvania, Philadelphia
ORTHOPEDIC SURGERY					
Denver General Hospital (Colorado State Medical Society)	February 16	3 days	35	\$10	Executive Secretary, Colorado State Medical Society, 537 Republic Bldg., Denver
Harvard Medical School, Courses for Graduates	Monthly; April 1	1 month, mornings (clinical); 1 month full time	1 or more; 8 or more	\$50; \$150 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Tufts Medical School, Postgraduate Division	March 2	6 days	.....	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
Faculty of Medicine of Columbia University	January 19 ²	9 days (seminar)	5-20	\$75	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	March 23; April 6	6 days intensive; 4 weeks, 3 afternoons	4-20	\$35; \$50	
	April 6	1 month, 2 mornings a week (anatomy)	6-15	\$40	
New York Polyclinic Medical School and Hospital	Arranged on application	3 months	.....	\$75 to \$100	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
OTOLARYNGOLOGY					
The Research Study Club of Los Angeles	January 19	2 weeks (includes ophthalmology)	.....	\$50	Secretary, The Research Study Club of Los Angeles, 2509 W. Washington Blvd., Los Angeles
	January 19	2 weeks, part time (anatomy of head and neck)	.....	\$50	
College of Medical Evangelists.....	March 29	20 hours	6-10	\$40	Chairman, Committee on Postgraduate Education, 312 N. Boyle Ave., Los Angeles
University of Illinois College of Medicine	January 19	4 months or more	.....	\$75 a semester	Assistant to the Dean, University of Illinois College of Medicine, 1853 W. Polk St., Chicago
Tulane University of Louisiana Department of Graduate Medicine	March	4 weeks (preparation for board examinations)	20	Not available	Director, Department of Graduate Medicine, Tulane University of Louisiana, 1430 Tulane Ave., New Orleans
Harvard Medical School, Courses for Graduates	April	1 month (otology)	Limited	\$185 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
	Arranged on application	2 weeks (physiology); 1 month (clinical otology)	2	\$50 ²	
Tufts Medical School, Postgraduate Division	Monthly	1 month, mornings	.....	\$50 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
University of Michigan Department of Postgraduate Medicine	April 16	1 week (includes ophthalmology)	.....	\$10-\$25	Chairman, Department of Postgraduate Medicine, University of Michigan, Ann Arbor
Center for Continuation Study, University of Minnesota	March 2 ³	6 days	.....	\$25	Center for Continuation Study, University of Minnesota, Minneapolis
Faculty of Medicine of Columbia University	Arranged on application	4 weeks, 3 afternoons a week	6	\$30	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	Arranged on application ²	3 weeks (bronchoscopy) 4 courses in cadaver surgery	..... 2-6	\$250 Varies	
New York Eye and Ear Infirmary...	March	1 week (includes ophthalmology)	Limited	\$50	Registrar, New York Eye and Ear Infirmary, 218 Second Ave., New York City
	Arranged on application	1 to 3 months (includes ophthalmology)	.....	\$40 to \$110	
New York Polyclinic Medical School and Hospital	Arranged on application	6 weeks to 3 months (includes ophthalmology)	.....	\$100 to \$600	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
University of Oregon Medical School, Oregon Academy of Ophthalmology and Otolaryngology	April 6 ²	1 week (includes ophthalmology)	.....	\$25	Dean, University of Oregon Medical School, 3181 S.W. Marquam Hill Rd., Portland
Gill Memorial Eye, Ear, Nose and Throat Hospital, Roanoke, Va.	April 6	1 week (includes ophthalmology)	50	\$50	Medical Director, Gill Memorial Eye, Ear, Nose and Throat Hospital, 711 S. Jefferson St., Roanoke, Va.
PATHOLOGY					
Harvard Medical School, Courses for Graduates	Monthly	1 month	4	\$40 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
	Monthly ²	1 month (obstetrics and gynecology)	2	\$125 ²	
Faculty of Medicine of Columbia University	January to April	Various part time courses	Limited	\$45 to \$125	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
PEDIATRICS—See also Obstetrics					
University of California School of Medicine	January 5	2 weeks	Limited	\$90 ²	Director of Maternal and Child Health in state health departments of California, Arizona, Nevada, New Mexico, Utah and Idaho
University of Illinois College of Medicine	Arranged on application	8 lectures, 4 months clinical (child psychology)	.....	Varies	Assistant to the Dean, University of Illinois College of Medicine, 1853 W. Polk St., Chicago
Tufts Medical School, Postgraduate Division	January 5	4 weeks	4	\$50 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
University of Michigan Department of Postgraduate Medicine	April	1 week	.....	\$10 to \$25	Chairman, Department of Postgraduate Medicine, University of Michigan, Ann Arbor

Continuation Courses for Practicing Physicians—January 1 to April 30, 1942—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
PEDIATRICS—See also Obstetrics—Continued					
Jewish Hospital, Brooklyn (Joint Committee on Postgraduate Education)	April	8 weeks, 3 times a week	6	\$25	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
Beth-El Hospital, Brooklyn (Joint Committee on Postgraduate Education)	April 6	5 weeks, twice a week	8	\$10	
Faculty of Medicine of Columbia University	Monthly	1 month or longer (various courses)	Limited	\$40 to \$125	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	March 9	5 days (recent advances)	5 or more	\$35	
PERIPHERAL VASCULAR DISEASES					
The Mayo Foundation, University of Minnesota and The Mayo Clinic, Rochester	April 6	2 weeks	25-100 ¹	\$40	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Israel Zion Hospital, Brooklyn (Joint Committee on Postgraduate Education)	January 10	6 weeks, twice a week	8	\$10	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
PHYSICAL THERAPY					
Faculty of Medicine of Columbia University	April 6	5 days	4 or more	\$35	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Polyclinic Medical School and Hospital	Arranged on application	4 weeks or more	.....	\$100	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
PNEUMONIA					
University of Colorado School of Medicine (Colorado State Medical Society)	February 16	3 days	35	\$10	Executive Secretary, Colorado State Medical Society, 537 Republic Bldg., Denver
State Hygienic Laboratory, Iowa City	Arranged on application	3 days (pneumonia typing technic)	.....	None ²	Director, State Hygienic Laboratory, Iowa City
New York University College of Medicine	Arranged on application	4 weeks	4	\$150	Assistant Dean, New York University College of Medicine, 477 First Ave., New York City
PROCTOLOGY					
Harvard Medical School, Courses for Graduates	April 13	6 days	8 or more	\$50 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Tufts Medical School, Postgraduate Division	April 27	6 days	.....	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
University of Michigan Department of Postgraduate Medicine	April	3 days	.....	\$10-\$25	Chairman, Department of Postgraduate Medicine, University of Michigan, Ann Arbor
Brooklyn Hospital (Joint Committee on Post-Graduate Education)	February 24	3 weeks, 4 mornings a week	4	\$10	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
Jewish Hospital, Brooklyn (Joint Committee on Post-Graduate Education)	April 1	3 weeks, 3 mornings a week	6	\$25	
Faculty of Medicine of Columbia University	January 2 ³	3 months, 3 afternoons a week	2-4	\$150	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Polyclinic Medical School and Hospital	January 2; April 1	6 weeks (various courses)	.....	\$75 to \$100	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
PUBLIC HEALTH					
Loyola University School of Medicine	February 2	4 month semester (various courses)	.....	\$10 to \$125	Dean, Loyola University School of Medicine, 706 S. Wolcott Ave., Chicago
Johns Hopkins University School of Hygiene and Public Health	January 24; March 21	8 week quarter (various courses)	.....	\$10 to \$75	Dean, School of Hygiene and Public Health, Johns Hopkins University, 615 N. Wolfe St., Baltimore
Harvard Medical School, Courses for Graduates	February	4 months, hours arranged (epidemiology)	.....	Arranged	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Harvard School of Public Health	Arranged on application	1 month or more	.....	Varies	Dean, School of Public Health, 55 Shattuck St., Boston
Massachusetts Institute of Technology	2d semester	5 months	.....	\$300 a semester	Admissions Office, Massachusetts Institute of Technology, Cambridge
Albany Medical College.....	Arranged on application	1 year correspondence course, 11 conferences, 2 days in residence	.....	\$30	Director, Extension Course in Public Health, Albany Medical College, New Scotland Ave., Albany, N. Y.
Postgraduate Institute on Public Health, Tuberculosis League of Pittsburgh	April	4 days (institute for Negro physicians)	.....	No	Tuberculosis League of Pittsburgh, 2851 Bedford Ave., Pittsburgh
RADIOLOGY					
Harvard Medical School, Courses for Graduates	Monthly	1 month, 3 or 5 days a week (general and special roentgenology)	Limited	\$35 to \$100 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
	April	1 month, 2 evenings a week (physics)	.....	\$10 ²	
Tufts Medical School, Postgraduate Division	January 13	4 days	.....	\$25 ²	Chairman, Postgraduate Division, Tufts Medical School, 30 Bennet St., Boston
University of Michigan Department of Postgraduate Medicine	April	1 week	.....	\$10-\$25	Chairman, Department of Postgraduate Medicine, University of Michigan, Ann Arbor
Faculty of Medicine of Columbia University	January 5 ³	3 months, afternoons	.....	\$125	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City

Continuation Courses for Practicing Physicians—January 1 to April 30, 1942—Continued

Institution	Courses Scheduled to Begin	Length and Content of Course	Number of Students Accepted for Each Course	Registration Fee and/or Tuition	For Detailed Information, Write to
RADIOLOGY—Continued					
New York Polyclinic Medical School and Hospital	First of any month	6 week and 3 month courses (interpretation and technic of roentgenology)	.. .	\$150 to \$300	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
New York University College of Medicine	Spring	3 months, 3 after-a week	.. . . .	\$100	Office of the Dean, New York University College of Medicine, 477 First Ave., New York City
SURGERY					
Tulane University of Louisiana Department of Graduate Medicine	January 5; February 18	6 week courses	.. .	\$150 to \$225	Director, Department of Graduate Medicine, Tulane University of Louisiana, 1430 Tulane Ave., New Orleans
Harvard Medical School, Courses for Graduates	February 2	4 weeks	Limited	\$100 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Center for Continuation Study, University of Minnesota	January 19	6 days (emergency surgery in wai time)	..	\$25	Center for Continuation Study, University of Minnesota, Minneapolis
Cumberland Hospital, Brooklyn (Joint Committee on Post Graduate Education)	April 6	4 weeks; 2 afternoons a week (traumatic)	8	\$10	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
Faculty of Medicine of Columbia University	March 16, April 20 ³	6 days (traumatic)	530	\$35; \$60	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
	April 6 ³	6 week or 3 month seminar course	... ..	\$200 to \$400	
	Arranged on application	12 sessions in surgical anatomy; 8 in blood transfusion	Limited	\$75 to \$200; \$35	
New York Medical College	Arranged on application	60 hours (experimental surgery and technic)	14	\$250 for single student	Dean, New York Medical College, 5th Ave. at 105th St., New York City
New York Polyclinic Medical School and Hospital	January 2; April 1	3 months	.. .	\$350	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
	Arranged on application	6 weeks	.. . . .	\$100	
TUBERCULOSIS					
University of Colorado School of Medicine	April 13	6 days	1025 ¹	\$20	Executive Secretary, American College of Physicians, 4200 Pine St., Philadelphia
Mississippi State Tuberculosis Sanatorium	Arranged on application	2 weeks or more	.. .	None	Medical Director, State Sanatorium, Sanatorium, Miss.
Faculty of Medicine of Columbia University	February 2	2 weeks (diseases of the chest)	412	\$50	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
Cornell University Medical College	February 11; April 8	1 day	.. .	None	Secretary, Tuberculosis Sanatorium Conference of Metropolitan New York, 336 Fourth Ave., New York City
New York Medical College... ..	Arranged on application	1 month	.. .	\$100	Dean, New York Medical College, 5th Ave. at 105th St., New York City
UROLOGY					
College of Medical Evangelists	January 4; March 29	1 month, 50 hours	24	\$100	Chairman, Committee on Postgraduate Education, 312 N. Boyle Ave., Los Angeles
Graduate School of Medicine, University of Pennsylvania	Arranged on application	6 weeks, 36 hours (cystoscopy, etc.)	.. .	\$300	Dean, Graduate School of Medicine, University of Pennsylvania, 56th and Pine Sts., Philadelphia
Harvard Medical School, Courses for Graduates	April	1 month, mornings (genito urinary surgery)	4	\$75 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Tufts Medical School, Postgraduate Division	April 13	6 days	.. . . .	\$25	Chairman, Postgraduate Division, Tufts Medical School, 20 Bennet St., Boston
Long Island College Hospital, Brooklyn (Joint Committee on Post Graduate Education)	1st of each month	1 month or more	3	\$25 a month	Registrar, Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn
VENEREAL DISEASES					
City Hospital, Mobile, Ala.....	3d week of month	1 week	Limited	None ⁵	Director, Division of Venereal Disease Control, State Health Department, Montgomery, Ala.
Clinic at Hot Springs National Park, Ark.	April	4 weeks (venereal disease control)	Limited	None ⁶	Medical officer in charge, U. S. P. H. S. Medical Center, Hot Springs, Ark.
Howard University College of Medicine	January 3; March 21	3 months (venereal disease control)	10	\$20 ⁷	Dean, Howard University College of Medicine, Washington, D. C.
Harvard Medical School, Courses for Graduates	Monthly	10 sessions (gonorrhea in women)	.. .	\$20 ²	Assistant Dean, Harvard Medical School, 25 Shattuck St., Boston
Faculty of Medicine of Columbia University	Arranged on application	6 week and 3 month courses, part time	.. .	\$40 and \$75	Dean of the School of Medicine, Columbia University, 630 W. 168th St., New York City
New York Polyclinic Medical School and Hospital	Arranged on application	6 week and 3 month courses	.. .	\$35 to \$75	Medical Executive Officer, New York Polyclinic Medical School, 335 W. 50th St., New York City
Institute for the Control of Syphilis, Hospital of the University of Pennsylvania	Arranged on application ⁸	1 or 2 weeks; 1 month (venereal disease control)	12	\$25; \$50	Director, Institute for the Control of Syphilis, Hospital of the University of Pennsylvania, 34th and Spruce St., Philadelphia

A limited number of opportunities for postgraduate study in the clinical departments are also offered by the University of Chicago, The School of Medicine, Tulane University, of Louisiana School of Medicine; Johns Hopkins University School of Medicine; Duke University School of Medicine; Vanderbilt University School of Medicine, Meharry Medical College, and the University of Wisconsin Medical School.

1. The courses are organized especially for Fellows and Associates of the American College of Physicians, but where facilities are available, courses will be open to those with adequate preliminary training who are now preparing either to meet the requirements of membership in the College or certification by the American Board of Internal Medicine.

2. Registration fee of \$5 covers all courses taken within twelve months.

3. Admission is limited to physicians who have had adequate previous training and experience in the special field.

4. A faculty course given for staff members of mental institutions.

5. State boards of health furnish either the funds covering tuition fees, maintenance or transportation for physicians of the state.

6. Trainees are usually recommended by state or city health departments.

7. Applicants may qualify for a monthly stipend from the United States Public Health Service.

8. Short course scheduled on arrangement of health department or agency, one month course on an individual basis.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

MEDICAL CORPS, UNITED STATES NAVY

Examination. Assistant Surgeon with the permanent rank of Lieutenant (junior grade) and Acting Assistant Surgeon with the probationary rank of Lieutenant (junior grade), Jan. 5-9. Examination will be held at the Naval Hospitals at Chelsea, Mass., Newport, R. I., Brooklyn, Philadelphia, Norfolk, Va., Charleston, S. C., Pensacola, Fla., Corpus Christi, Tex., San Diego and Mare Island, Calif., Puget Sound, Wash., Great Lakes, Ill., Pearl Harbor, T. H., and Naval Medical Center, Washington, D. C. Apply Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, December 27, page 2272.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARIZONA: * Phoenix, Jan. 6-7. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * Little Rock, June 4-5. Sec., Dr. D. L. Owens, Harrison. CONNECTICUT: * Medical Examination. Hartford, March 10-11. Endorsement. Hartford, March 24. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. Homopathic. Derby, March 10-11. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 22-23. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 12-15. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO: Boise, Jan. 13. Dir., Bureau of Occupational License, Mr. Walter Curtis, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Jan. 20-22. Superintendent of Registration, Mr. Philip M. Harmann, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: * Des Moines, Jan. 15-17. Dir., Division of Licensure and Registration, State Department of Health, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, March 10-11. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 10-13. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: * Ann Arbor and Detroit, June 10-12. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Jan. 20-22. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MONTANA: Helena, April 7-8. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

* NEVADA: Reciprocity. Carson City, February 2. Sec., Dr. Frederick M. Anderson, 215 N. Carson Street, Carson City.

NEW HAMPSHIRE: Concord, March 12-13. Sec., Dr. T. P. Burroughs, Board of Registration in Medicine, State House, Concord.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 13-14. Sec., Dr. Le Grand Ward 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 26-29. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, State Education Department, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OREGON: Portland, Jan. 21-23. Exec. Sec., Miss Lorianne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 6-10. Acting Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, Jan. 8-9. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: * Pierre, Jan. 13-14. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TEXAS: Galveston, March 23-25. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawless, Richmond.

WEST VIRGINIA: Charleston, March 2-4. Commissioner, Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WASHINGTON: * Seattle, Jan. 12-14. Dir., Department of Licenses, Mr. Thomas A. Swayze, Olympia.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Feb. 2-3. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT: Feb. 14. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, April 20-21. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Professor J. F. Conn, John B. Stetson University, De Land.

IOWA: Des Moines, Jan. 13. Dir., Division of Licensure and Registration, State Department of Health, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: February 13-14. Sec., Miss Flora E. Dube, East Lansing.

MINNESOTA: Minneapolis, Jan. 6-7. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Omaha, Jan. 13-14. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Albuquerque, Feb. 2. Sec., Miss Pia Joerges, State Capitol, Santa Fe.

OREGON: Portland, Feb. 14. Applications must be on file not later than Jan. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Feb. 18. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

WASHINGTON, Seattle, Jan. 8-9. Dir., Department of Licenses, Mr. Thomas A. Swayze, Olympia.

Texas June Report

The Texas State Board of Medical Examiners reports the written examination for medical licensure held at Austin, June 16-18, 1941. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. One hundred and seventy-one candidates were examined, 162 of whom passed and 9 failed. Sixty-one physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Rush Medical College.....	(1939)		1
Tulane University of Louisiana School of Medicine.....	(1941)		1
Washington University School of Medicine.....	(1940)		1
University of Oklahoma School of Medicine.....	(1939), (1941)		2
Temple University School of Medicine.....	(1940)		1
University of Pennsylvania School of Medicine.....	(1940), (1941)		2
Baylor University College of Medicine.....	(1941, 62)		62
University of Texas School of Medicine.....	(1941, 83)		83
University of Wisconsin Medical School.....	(1940, 2)		2
Osteopaths *			7

School	FAILED	Year Grad.	Number Failed
Baylor University College of Medicine.....	(1941)		1
University of Texas School of Medicine.....	(1941, 3)		3
Osteopaths *			5

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists.....	(1938)		California
University of Colorado School of Medicine.....	(1928)		Indiana
Georgetown University School of Medicine.....	(1938)		Maine
Howard University College of Medicine.....	(1937)		Virginia
University of Georgia School of Medicine.....	(1925)		Georgia
The School of Medicine of the Division of the Biological Sciences.....	(1938)		Minnesota
University of Chicago, The School of Medicine.....	(1939)		Ohio
Univ. of Illinois College of Medicine.....	(1930), (1936), (1940)		Illinois
Central College of Physicians and Surgeons, Indianapolis.....	(1900)		Indiana
Physio-Medical College of Indiana.....	(1898)		Oklahoma
Indiana University School of Medicine.....	(1937)		Indiana
State University of Iowa Col.	(1938)		Iowa
Kansas Medical College, Medi	(1900)		Oklahoma
burn College.....	(1936)		Kansas
University of Kansas School of Medicine.....	(1919), (1926)		Kentucky
University of Louisville Scho	(1934)		Louisiana
Louisiana State University	(1940)		Louisiana
Louisiana State University S	(1925),		
Tulane University of Louisiana School of Medicine.....	(1936), (1938, 2), (1939), (1940, 2)		Louisiana
Harvard Medical School.....	(1936)		New York
University of Michigan Medical School.....	(1933)		Connecticut
Wayne University College of Medicine.....	(1941)		Michigan
University of Nebraska College of Medicine (1924),			
(1937), (1938) Nebraska			
Bellevue Hospital Medical College.....	(1898)		New York
Columbia University College of Physicians and Sur-	(1931), (1935)		New York
geons			Ohio
Ohio State University College of Medicine.....	(1927)		Kentucky,
University of Cincinnati College of Medicine.....	(1930)		
(1940) Ohio			Ohio
Western Reserve University Medical Department....	(1912)		
Western Reserve University School of Medicine.....	(1926),		
(1938) Ohio			
University of Oklahoma School of Medicine.....	(1917),		
(1931), (1933, 2), (19			
University of Pittsburgh	(1930)		Penna.
Medical College of the	(1940), S. Carolina		
Meharry Medical College.....	(1940, 3)		Tennessee
University of Tennessee College of Medicine.....	(1927)		New York,
(1935), (1938) Tennessee			
Marquette University School of Medicine.....	(1925), (1937)		Wisconsin
(1940) Ohio			
University of Wisconsin Medical School.....	(1938)		Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Illinois College of Medicine.....	(1930)		U. S. Navy
Jefferson Medical College of Philadelphia.....	(1931)		U. S. Navy

* Examined in medicine and surgery.

Wisconsin June Report

The Wisconsin State Board of Medical Examiners reports the written examination for medical licensure held at Milwaukee, June 24-26, 1941. The examination covered 19 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and four candidates were examined, all of whom passed. Twenty-eight physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists.....		(1941)	1
Loyola University School of Medicine.....		(1941)	1
Northwestern University Medical School.....		(1940, 2), (1941, 4)	6
Rush Medical College.....		(1940, 4)	4
University of Illinois College of Medicine.....		(1941, 7)	7
University of Louisville School of Medicine.....		(1941, 7)	1
University of Michigan Medical School.....		(1941, 7)	1
University of Minnesota Medical School.....		(1941, 7)	3
University of Nebraska College of Medicine.....		(1940)	1
Hahnemann Medical College and Hospital of Philadelphia.....		(1940)	1
Temple University School of Medicine.....		(1940, 2)	2
Medical College of Virginia.....		(1940)	1
Marquette University.....		(1941, 47)	47
Univ. of Wisconsin M.....		(1940, 24)	26
University of Toronto.....		(1936)	1
Osteopaths.....			2

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....		(1932)	Arkansas
University of California Medical School.....		(1932), (1933)	California
Loyola University School of Medicine.....		(1940)	Illinois
Northwestern University Medical School.....		(1925)	North Dakota,
(1937), (1940) Illinois			
Rush Medical College.....		(1928) Michigan, (1936), (1939, 2)	Illinois
University of Chicago, The School of Medicine.....		(1939)	Minnesota
University of Illinois College of Medicine.....		(1939)	Illinois
University of Kansas School of Medicine.....		(1932)	Kansas
Indiana University School of Medicine.....		(1932)	Indiana
University of Louisville School of Medicine.....		(1932)	Kentucky
University of Michigan Medical School.....		(1939)	Michigan
Wayne University College of Medicine.....		(1939)	Michigan
University of Minnesota Medical School.....		(1939)	Minnesota
Washington University School of Medicine.....		(1939)	Missouri
Creighton University School of Medicine.....		(1939)	Nebraska
Cornell University Medical College.....		(1939)	New York
Long Island College of Medicine.....		(1939)	New York
University of Wisconsin Medical School.....		(1933)	Oklahoma,
(1938) Louisiana			

* Licenses have not been issued.

† Examined in surgery.

Montana October Report

The Montana State Board of Medical Examiners reports the written examination for medical licensure held at Helena, Oct. 6-8, 1941. The examination covered 10 subjects. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Eight physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine.....		(1910)	1
Université de Lausanne Faculté de Médecine.....		(1937)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....		(1940)	Colorado
Northwestern University Medical School.....		(1938)	Indiana
Tulane University of Louisiana School of Medicine.....		(1935)	Minnesota
University of Minnesota Medical School.....		(1935), (1937, 2)	Minnesota
St. Louis University School of Medicine.....		(1941)	Missouri
Marquette University School of Medicine.....		(1935)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.
Northwestern University Medical School.....		(1937)
Creighton University School of Medicine.....		(1940)

Oregon July Report

The Oregon State Board of Medical Examiners reports the written examination for medical licensure held at Portland, July 24-26, 1941. The examination covered 12 subjects and included 86 questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists.....		(1941)	5
University of Illinois.....		(1941)	1
University of Kansas.....		(1941)	2
University of Nebraska College of Medicine.....		(1939)	1
University of Oregon Medical School.....		(1939), (1940, 8)	9
Osteopaths.....			1

* Examined in surgery.

Bureau of Legal Medicine
and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Fraudulent Concealment as Affecting Statute of Limitations.—In March 1929 the defendant dentist removed an impacted wisdom tooth, and an attached pus sac, from the plaintiff's lower left jaw and a few months later also extracted her lower right wisdom tooth. She continued to have headaches and pain in various parts of her body, however, and consulted the defendant again the latter part of 1929 but was advised that she was not suffering from any infection due to her teeth. During the next several years the plaintiff consulted many doctors and submitted to operations for the removal of her tonsils, appendix and gallbladder, but the pain in her face continued. In March 1938 a roentgenogram taken by some dentist other than the defendant revealed two fragments of tooth root in the plaintiff's lower left jaw bone. These were removed and the plaintiff gradually regained her health. In a subsequent suit against the defendant for malpractice, the jury returned a verdict for the defendant, and the plaintiff appealed to the Supreme Court of Errors of Connecticut.

The plaintiff contended that the defendant had fraudulently concealed from her the existence of the broken pieces of tooth in her jaw and that therefore the defense of the statute of limitations was not available. The Supreme Court of Errors said that, in order for the plaintiff to sustain her contention, she was required to prove that the defendant had actual or constructive knowledge that the fragments of tooth remained in the plaintiff's jaw after the extraction. Without such knowledge there could be no fraudulent concealment. The plaintiff testified that the defendant showed her the tooth after it had been extracted and called her attention to the pus sac attached thereto. Nothing was then said or done by the defendant which indicated a knowledge that any part of the tooth still remained in her jaw. Furthermore, there was no expert testimony supporting the theory that, in the exercise of due care and skill, the defendant should have known that the fragment remained. The court therefore held that there was nothing in the record to indicate a finding that the defendant either knew or should have known of such condition or that he was guilty of a gross want of due care. The court further held that the plaintiff could not rely on the doctrine of *res ipsa loquitur*. Such doctrine could be applied to infer negligence only when there were some facts proved which afforded a basis for such inference. Here there were no such facts shown. Applied to this case, therefore, the doctrine would only infer negligence in failing to discover that the fragments remained rather than an actual knowledge thereof. The judgment for the defendant was therefore affirmed.—*Frogge v. Shugrue*, 13 A. (2d) 503 (Conn., 1940).

Medical Practice Acts: Graduates from Foreign Medical Schools; Foreign Licensure Requirement.—The plaintiff, a citizen of the United States and a resident of the state of California, received one year of medical instruction at the University of Albert-Ludwig in Germany and then concluded his medical studies at the University of Basle in Switzerland. He then returned to the United States and served an eighteen months internship in the Los Angeles County General Hospital. The evidence showed that the medical schools which the plaintiff attended and the hospital in which he interned were all approved by the defendant board as proper places for instruction and internship. When the plaintiff subsequently petitioned the defendant, the Board of Medical Examiners of the State of California, for permission to take the regular examination for a physician's and surgeon's license, however, he was denied that right on the ground that he had failed to show that he was licensed to practice medicine in Switzerland. The plaintiff filed

a petition for a writ of mandamus to compel the board to permit him to take the examination. The trial court found in favor of the plaintiff and the defendant appealed to the district court of appeal, second district, division 2, California.

The Business and Professions Code of California (Section 2193) requires that a person whose application for examination is based on a diploma issued by a foreign medical school must show, among other things, that

(c) He has been admitted or licensed to practice medicine and surgery in the country where the institution in which he has pursued his medical course of professional instruction is located.

The plaintiff contended that this requirement constituted an unreasonable, arbitrary and discriminatory exercise of the police power. It was necessary to determine, said the district court of appeal, whether or not the legislature intended the requirement to apply both to aliens and to American citizens. The court found that it was impossible for an American citizen to obtain a license to practice medicine in Switzerland and that, because of this inability, an alien applicant who had attended a foreign school was in a better position before the California board than was a citizen who had so attended, because the alien was able to obtain a license to practice in his native country. To the court it seemed unreasonable to believe that the legislature intended such an unjust result. The court therefore assumed that the legislature had been properly informed on the subject matter of the requirement and knew, at the time Section 2193 (c) was enacted, that American citizens were unable to obtain the required foreign license. It therefore concluded that the legislature must have meant the requirement to apply only to alien petitioners. Any other holding, said the court, would result in an injustice and an absurdity. The judgment for the plaintiff was accordingly affirmed.—*Leo v. Board of Medical Examiners*, 97 P. (2d) 1046 (Calif., 1940).

Malpractice: Liability of Physician for Negligence of Nurse.—One of the plaintiffs, Mrs. Kelly, took her infant son to the office of the defendant physician for an examination. While she was waiting her turn to see the doctor, a nurse employed by the defendant requested her to assist in holding a child on the x-ray table. The nurse-technician was in sole charge of the x-ray room and apparatus. In order to do this, Mrs. Kelly was directed to take a position between the x-ray table and the wall, touching both, with her hands on the child's ankles. She noticed that the child's ankles were wet but was advised that that was a matter of no importance. While Mrs. Kelly was thus acting as requested, the nurse turned on the electric current. Instantly there was a flash and a spark from the mechanism to Mrs. Kelly's head, the light in the x-ray machine immediately went out and Mrs. Kelly fell to the floor. She was both burned by the electric current and injured by the fall. Subsequently the plaintiffs, Mr. and Mrs. Kelly, sued the defendant physician for damages alleged to have been caused by the negligence of the defendant's nurse. From a judgment in favor of the plaintiffs, the defendant appealed to the Supreme Court of Pennsylvania.

The defendant contended that the judgment should be reversed because there was no evidence of any negligence chargeable to him. The Supreme Court said that when a physician burns a patient in the course of a roentgen treatment no prima facie liability attaches because burns do occur occasionally in the ordinary course of an exposure in spite of the highest degree of diligence and care to prevent them. In such a case the patient, in order to recover damages, must show that the apparatus was different from that ordinarily used or that the technician was incompetent to use it. The wife-plaintiff, however, continued the court, was not a patient of the defendant at the time she received her injuries. She was acting at the request and under the direction of the defendant's agent and thus did not assume the risks which a patient had to assume. When a thing which causes an injury is shown to be under the management of the defendant, the Supreme Court continued, and the accident is such as in the ordinary course of things does not

happen if those who have the management use proper care, it affords reasonable evidence, in the absence of any explanation by the defendants, that the accident arose from such want of care. The effect of this principle is to require the defendant, in a case of this nature, to produce affirmative proof of his own freedom from fault. No such evidence was produced on behalf of the defendant, and the jury was justified, in the opinion of the court, in finding that the nurse was negligent.

The Supreme Court further found that the nurse-technician was the defendant's servant and that the taking of roentgenograms was within the scope of her employment. Moreover, her implied authority included the control of the patient as well as the actual operation of the apparatus. Her act in inducing the wife-plaintiff to assist her was thus incidental to the defendant's business and in furtherance of it, said the court, even though it was not specifically authorized. The defendant was therefore responsible for the consequences of her act. The judgment for the plaintiffs was accordingly affirmed.—*Kelly et al. v. Yount*, 7 A. (2d) 582; 12 A. (2d) 579 (Penn., 1940).

Workmen's Compensation Acts: Compensability for Death Due to Bacillus Enteritidis.—The duties of the employee consisted of skinning and butchering animals for use in the manufacture of chicken feed and other animal by-products. On Aug. 10 or 12, 1937, he became ill while at work and died twelve days later, death being attributed to *Bacillus enteritidis*. An award of compensation was denied by the industrial commission, and the widow of the employee appealed to the Supreme Court of Utah.

The workmen's compensation act of Utah provides that "(5) 'Personal injury by accident arising out of or in the course of employment' . . . shall not include a disease, except as it shall result from the injury." The defendant contended that the employee did not die as the result of an accident within the meaning of the act but rather as the result of a disease. The Supreme Court said that an accident is not limited in meaning to the application of physical force to the body of the injured but that infection by germs may be an accidental or unexpected event, even though not preceded by physical force. On the other hand, the Court continued, an illness is not compensable merely because it is contracted while the employee is engaged in his usual occupation; there still has to be a definite causal connection between the employment and the illness. The Court found that the disease from which the employee in this case died was rare and uncommon. It was contracted from diseased meat and the employee came in contact with such meat at the place he worked. The only reasonable conclusion, held the Supreme Court, was that the employee contracted the disease in the course of his employment. Judgment for the defendant was therefore reversed and the cause remanded for further proceedings.—*Andreason v. Industrial Commission*, 100 P. (2d) 202; 102 P. (2d) 894 (Utah, 1940).

Society Proceedings

COMING MEETINGS

- Annual Congress on Industrial Health, Chicago, Jan. 12-13. Dr. C. M. Peterson, 535 North Dearborn St., Chicago, Secretary.
- Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17. Dr. William D. Cutter, 535 North Dearborn St., Chicago, Secretary.
- American Academy of Orthopedic Surgeons, Atlantic City, N. J., Jan. 11-15. Dr. Rexford L. Diveley, 1103 Grand Ave., Kansas City, Mo., Secretary.
- American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norvelle C. LaMar, 149 East 73d St., New York, Secretary.
- Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio.
- Pacific Coast Surgical Association, San Francisco and Del Monte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.
- Society of Surgeons of New Jersey, Trenton, Jan. 28. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

202:469-624 (Oct.) 1941

- Clinical Studies with Ballistocardiograph in Congestive Failure, on Digitalis Action, on Changes in Ballistic Form and in Certain Acute Experiments. I. Starr, Philadelphia.—p. 469.
- Synovial Fluid and Synovial Membrane Abnormalities Resulting from Varying Grades of Systemic Infection and Edema. H. C. Coggeshall, G. A. Bennett, C. F. Warren and W. Bauer, Boston.—p. 486.
- Studies of B Vitamins in Human Subject: I. Intake of Thiamine and Its Relation to Other Dietary Constituents in Food Selected by Normal Subject. K. O. Elsom and T. E. Machella, Philadelphia.—p. 502.
- Id.: II. Urinary Excretion of Ingested Thiamine in Patients with Chronic Hepatic Disease. T. E. Machella and K. O. Elsom, with technical assistance of Charlotte S. Chornock, Philadelphia.—p. 512.
- Protein Bound Iodine in Blood: V. Naturally Occurring Iodine Fractions and Their Chemical Behavior. A. M. Bassett, A. H. Coons and W. T. Salter, with technical assistance of Sophia M. Simmons, Boston.—p. 516.
- Id.: VI. Its Relation to Thyroid Function in 100 Clinical Cases. W. T. Salter, A. M. Bassett and T. S. Sappington, with technical assistance of Sophia M. Simmons, Boston.—p. 527.
- Experimental Aspiration Pneumonia: Fluorescence and Pathology. I. J. Wolman and Anna B. Bayard, Philadelphia.—p. 542.
- *Action of Globin Insulin Compared with That of Crystalline, Unmodified, and Protamine Zinc Insulin. G. G. Duncan and C. E. Barnes, Philadelphia.—p. 553.
- Studies on Hemorrhagic Agent 3,3'-Methylenebis (4-Hydroxycoumarin): I. Its Effect on Prothrombin and Coagulation Time of Blood of Dogs and Humans. J. B. Bingham, O. O. Meyer and F. J. Pohle, Madison, Wis.—p. 563.
- Globulin Fraction in Rabbit's Plasma Possessing Strong Clotting Property. I. A. Parfentjev, Pearl River, N. Y.—p. 578.
- Thrombic Activity of Globulin Fraction Derived from Rabbit Plasma. F. H. L. Taylor, E. L. Lozner and Margaret A. Adams, Boston.—p. 585.
- *Use of Rabbit Thrombin as Local Hemostatic. E. L. Lozner, Harriet MacDonald, M. Finland and F. H. L. Taylor, Boston.—p. 593.

Comparison of Types of Insulin.—Duncan and Barnes state that there is evidence that globin insulin acts with sufficient rapidity to prevent hyperglycemia during the day and that its action is sufficiently prolonged to control the level of the blood sugar throughout the night. Before they attempted the routine treatment of diabetic patients with globin insulin they determined the time of onset, the intensity and the duration of the hypoglycemic effect produced in 42 patients by a single injection and compared the results with those produced by single doses of the insulins now in common use. The globin insulin, in all but 1 of the subjects studied, had a blood sugar lowering action which began within two hours of its injection. This effect reached a maximal intensity between the second and the eighth hour and was maintained for eighteen to twenty-four hours. The hypoglycemic action during the first four hours was slower than that of unmodified and crystalline insulin but more rapid than that of protamine zinc insulin. The period of maximal effect began sooner and ceased earlier than that following the administration of protamine zinc insulin. Thus the tendency of the more rapid action of globin insulin to prevent postcibal hyperglycemia would obviate the need of supplemental doses of unmodified or crystalline insulin. The lowest level of blood sugar was reached between the eighth and the tenth hour after the administration of globin insulin. Thus patients receiving globin insulin routinely are prone to have hypoglycemic reactions between 4 p. m. and dinner time unless appropriate dietary rearrangements are made to prevent them. Patients who received moderately large doses of insulin had slightly greater hypoglycemic effects from the globin than from the protamine zinc insulin, indicating that unit for unit globin insulin has a greater hypoglycemic effect than protamine zinc insulin.

Rabbit Thrombin as Local Hemostatic.—Lozner and his associates observed the effect of rabbit thrombin on 11 patients bleeding from small wounds. Nine of the patients had hemorrhagic diatheses (4 had hemophilia, 3 symptomatic thrombocytopenic purpura, 1 hypoprothrombinemia and 1 hereditary thrombasthenia) and 2 patients had hypertension with epistaxis. Dry, powdered rabbit thrombin was usually used to impregnate a dressing, pack or "gauze bite" dampened with sterile saline solution. The dry powder comes into immediate contact with the bleeding surface. With only one exception the hemostasis produced by rabbit thrombin was complete and immediate. That is, as soon as the dressing was applied hemorrhage was arrested. In 1 patient with hypertension and epistaxis bleeding had persisted for fourteen days prior to rabbit thrombin therapy, despite the use of various hemostatics and four blood transfusions. The patient in whom hemostasis was at first only partial had complete and immediate hemostasis after two subsequent applications on succeeding days. The unsatisfactory result of the first application was probably due to error in application. Rabbit thrombin solution was also of value as a local hemostatic but was not as effective as the dry powder. There were no toxic effects after the use of either form of thrombin. The hemostatic effect of rabbit thrombin is apparently accomplished by its instantaneous precipitation of fibrin.

American J. Obstetrics and Gynecology, St. Louis

42:557-744 (Oct.) 1941

- Proliferative Changes in Senile Endometrium. E. Novak and E. H. Richardson Jr., Baltimore.—p. 564.
- Comparative Analysis of Total Abdominal, Supravaginal and Vaginal Hysterectomies. H. E. Miller and O. Prejan, New Orleans.—p. 580.
- Total Hysterectomy, Abdominal and Vaginal. W. C. Danforth, Evanston, Ill.—p. 587.
- Excretion of Estrogen and Pregnanediol Preceding Normal Parturition. C. Bachman, Philadelphia.—p. 599.
- Evaluation of Colorimetric Quantitation of 17-Ketosteroids: Application in Gynecology. R. A. Ross, E. C. Hamblen, W. K. Cuyler and Margaret Baptist, Durham, N. C.—p. 607.
- Effect of Gonadotropins on Human Ovary. S. H. Geist, J. A. Gaines and U. J. Salmon, New York.—p. 619.
- *Time of Onset and Duration of Toxemias of Late Pregnancy in Relation to Development of Permanent Vascular Damage. C. H. Peckham, Cooperstown, N. Y.—p. 638.
- Interpretation of Blood Pressure Behavior During Pregnancy and Puerperium. R. A. Bartholomew and E. D. Colvin, Atlanta, Ga.—p. 646.
- Endocrine Factors in Secondary Amenorrhea. C. F. Fluhmann and Kathleen M. Murphy, San Francisco.—p. 656.
- Osteochondritis in Stillborn. J. R. McCord, Atlanta, Ga.—p. 667.
- Study of Intrauterine Oxygen Exchange. N. R. Kretzschmar, H. A. Towsley, F. J. Stoddard and J. Engelfried, Ann Arbor, Mich.—p. 677.
- Consideration of Cause and Possible Late Effect of Anoxia in Newborn Infant. F. L. McPhail and E. L. Hall, Great Falls, Mont.—p. 686.
- *Vitamin Therapy in Vulvar Dermatoses: Components of B Complex. H. C. Hesseltine, Chicago.—p. 702.
- Developments and Trends in Gynecology. H. E. Sigerist, Baltimore.—p. 714.

Pregnancy Toxemias in Relation to Vascular Damage.

—Peckham followed up 500 women whose pregnancy was complicated by toxemia to determine whether the time of onset and the duration before parturition are of importance in the development of permanent vascular damage. The follow-up study after parturition consisted in examinations at intervals of three months for two to twelve years. All the women were apparently normal when first seen in the antepartum clinic. The race and age of the patient, the degree of hypertension, the degree of albuminuria during pregnancy, the type of delivery and the result to the child had no significant bearing on the month in which toxemia developed. The incidence of multiparas increased as the onset of the toxemia took place in the earlier months of gestation. If the toxemia was manifest near the beginning of gestation the number of abnormally high blood pressure readings increased, both at the time of the patient's discharge from the hospital and six weeks post partum. The incidence of previous toxemia was higher in patients evidencing toxemia early in pregnancy than in those whose first abnormality occurred in the later months. There was a similar trend in subsequent pregnancies. The incidence of chronic vascular damage was 63.4 per cent. The percentage was 89.93 among multiparas and 32.76 among primiparas. Vascular damage was always seen in the primipara whose toxemia occurred prior to the sixth month of gestation. Multiparas had vascular damage if the toxemia occurred prior to the eighth month. Vascular damage

occurred in the primipara who had been carried for more than twelve weeks after toxemia developed; the limit for multiparas was six weeks. It seems that the duration of a toxemia is of more importance in relation to subsequent vascular disease than the month of onset. Termination of the pregnancy to avoid chronic damage appears justified if signs and symptoms persist after four weeks of observation and treatment.

Vitamin Therapy in Vulvar Dermatoses.—Hesseltine observed the responses of 15 patients with chronic atrophic dermatitis of the vulva, 5 with an undetermined type of vulvitis and 2 with unexplained vulvar pruritus to single and combined factors of the vitamin B complex. The oral route was used almost exclusively. According to the usual standards, 19 of the 22 patients were apparently free of vitamin deficiency, 1 existed on an inadequate diet, 1 had a faulty or inadequate absorption and 1 suffered from a protracted and unusual infection with multiple draining areas. If improvement did not follow thiamine hydrochloride therapy other components of the B complex were added. Therapy with the vitamin B complex did not eradicate vitiligo or correct advanced chronic atrophic dermatitis of the vulva, although symptoms were partially or completely relieved and fissures and leukoplakic areas disappeared. On the other hand the first stage of chronic atrophic vulvitis and certain types of undetermined vulvitis cleared up after treatment with thiamine hydrochloride, thiamine hydrochloride and riboflavin or multiple factors of the B complex. There was a tendency to recurrence in a few of the patients whose symptoms were alleviated (cured), possibly because of the premature withdrawal of the vitamins, some imbalance in metabolism or some other state. Small maintenance doses may be needed. The administration of factors of the B complex for chronic atrophic dermatitis of the vulva is not yet endorsed except for persons in such poor health they cannot be operated on and for patients with a vulvitis for which there is no specific therapy. If chronic irritation can be relieved perhaps the incidence of malignant growths might be reduced.

American Journal of Psychiatry, New York

98:159-316 (Sept.) 1941

- Usefulness of Statistics to the Administrator. N. A. Dayton, Boston.—p. 159.
- One Hundred Schizophrenic Cases of Late Hospitalization. L. Maletz and Grace H. Kent, Hathorne, Mass.—p. 173.
- Comparison of Results of Metrazol Therapy with Group of Matched Controlled Cases. J. B. Craig and M. E. Schilling, Ann Arbor, Mich.—p. 180.
- Electroencephalogram Studies of Nine Cases with Major Psychoses Receiving Metrazol. K. H. Finley and J. M. Lesko, Boston.—p. 185.
- Protracted Shock: Its Cause and Its Prevention. J. P. Frostig, San Francisco; I. M. Rossman, W. B. Cline Jr. and O. Schwoerer, Wingdale, N. Y.—p. 192.
- Effect of Benzadrine Sulfate Alternated with Sodium Amytal in Schizophrenia. L. Reznikoff, Secaucus, N. J.—p. 196.
- Shock Therapy in Psychosis Complicating Pregnancy: Case Report. H. H. Goldstein, J. Weinberg and M. I. Sankstone, Chicago.—p. 201.
- General Semantics, Psychiatry, Psychotherapy and Prevention. A. Korzybski, Chicago.—p. 203.
- *Amphetamine (Benzadrine) Sulfate as Corrective for Depression of Sedative Medication in Epilepsy. L. J. Robinson, Palmer, Mass.—p. 215.
- Physiologic Conception and Treatment of Certain Common "Psychoneuroses." E. Jacobson, Chicago.—p. 219.
- X-Ray Evidence of Emotional Influences on Esophageal Function. W. B. Faulkner Jr., San Francisco.—p. 227.
- Psychopathic Department of an American General Hospital in 1808. W. L. Russell, New York.—p. 229.
- Method for Preliminary Psychiatric "Screening" of Large Groups. L. S. Penrose, London, Ont., Canada, and C. R. Myers, Toronto, Canada.—p. 238.
- Disturbances of Behavior in Patients with Disseminated Sclerosis. O. R. Langworthy, L. C. Kolb, Baltimore, and S. Androp, Catonsville, Md.—p. 243.
- Electroencephalogram of Normal Children: Effect of Hyperventilation. N. Q. Brill and Herta Seidemann, New York.—p. 250.
- Amphetamine Sulfate as Corrective in Epilepsy.**—Robinson gave amphetamine sulfate to 58 epileptic patients to circumvent the untoward toxic effects (irritability, drowsiness, ataxia, aggressiveness, anorexia, vertigo, nystagmus and tremor) of anticonvulsant therapy. The therapy usually consisted of phenobarbital. The daily dose of amphetamine sulfate ranged from 5 to 30 mg. It was given orally. The drug counteracted the drowsiness in 39, or 64.2 per cent, of the 56 patients having this manifestation. It combated along with the drowsiness the ataxia in 3 of 13 patients. It counteracted irritability in

3 of 15 patients. Giving amphetamine sulfate did not usually correct aggressiveness. It was necessary to give amphetamine sulfate only temporarily to patients who slowly acquire a tolerance to large doses of phenobarbital. In such patients it overcame the toxic symptoms until tolerance was established, when it could be withdrawn. In other patients, toxic phenomena reappeared unless the amphetamine sulfate therapy was continued as long as the phenobarbital medication was not reduced. In no case did the use of amphetamine sulfate alter the incidence of seizures. What it did do was to make it possible to reduce seizures in many patients by giving them adequate anticonvulsant medication without toxic manifestations forcing discontinuance.

Archives of Dermatology and Syphilology, Chicago

44:547-772 (Oct.) 1941

- Balanitis Xerotica Obliterans. C. Freeman, St. Paul, and C. W. Laymon, Minneapolis.—p. 547.
- Membranous Stomatitis Associated with Debilitation and Uremia. E. S. Bereston, Baltimore, and H. Keil, New York.—p. 562.
- Photodynamic Action of Lime Oil (*Citrus Aurantifolia*). W. M. Sams, Miami, Fla.—p. 571.
- Argyria, with Special Reference to Cutaneous Histopathology. W. R. Hill and H. Montgomery, Rochester, Minn.—p. 588.
- Coral Dermatitis. O. L. Levin and H. T. Behrman, New York.—p. 600.
- Dermatitis Venenata Due to Nail Lacquer. E. D. Osborne, J. W. Jordan and P. C. Campbell Jr., Buffalo.—p. 604.
- Erythema Palmare and Naevus-Araneus-like Telangiectases. E. N. Walsh, Whiting, Ind., and S. W. Becker, Chicago.—p. 616.
- Combined Fungous Infections: Report of Six Cases with Review of Thirty-Six Cases from Literature. E. Muskatblit, New York.—p. 631.
- Histologic Studies of Uninvolved Skin of Patients with Psoriasis. J. F. Madden, St. Paul.—p. 655.
- Solubility of Dermatitis-Producing Fraction of Poison Ivy. J. B. Howell, Dallas, Texas.—p. 665.
- Syphilis of Larynx: Report of Atypical Case. L. Felderman, Philadelphia.—p. 667.
- Urticaria Due to Trypsamide. R. H. Kampmeier, Nashville, Tenn.—p. 671.

44:773-982 (Nov.) 1941

- Ectodermal and Mesodermal Dysplasia with Osseous Involvement. H. N. Cole, J. R. Driver, H. K. Giffen, C. B. Norris and G. Stroud 3d, Cleveland.—p. 773.
- Acanthosis Nigricans: Its Occurrence in Association with Gastric Carcinoma in Seventeen Year Old Girl. W. C. Herold, St. Louis; W. H. Kaufman and D. C. Smith, Charlottesville, Va.—p. 789.
- *Iontophoresis of Copper Sulfate in Cases of Proved Mycotic Infection. A. M. Greenwood and Ethel M. Rockwood, Boston.—p. 800.
- Undenatured Trichophytin: Preparation and Clinical Application. H. E. Miller, R. A. Stewart and Frances Kimura, San Francisco.—p. 804.
- Trichophytin: II. Apparent Separation of Skin-Reactive Factor from Therapeutic Principle in Trichophytin. S. M. Peck, A. Glick and E. Weissbard, New York.—p. 816.
- *Ringworm of Feet: Shoes and Slippers as Source of Reinfection: Final Report. R. C. Jamieson and Adelia McCrea, Detroit.—p. 837.
- Ingestion of Lard in Treatment of Eczema and Allied Dermatoses: Clinical and Biochemical Study. C. W. Finnerud, Chicago; R. L. Kesler, Oak Park, Ill., and Hilda F. Wiese, Chicago.—p. 849.
- Absorption of Externally Applied Ammoniated Mercury. O. S. Gibbs, R. Shank, Harriet Pond, Memphis, Tenn., and G. H. Hansmann, Milwaukee.—p. 862.
- *Sulfaguanidine in Treatment of Proctitis Due to Lymphogranuloma Venereum: Report of Six Cases. O. Canizares, New York, and G. E. Morris, Boston.—p. 873.
- Accidental Inoculation with *Spirochaeta Pallida*. C. Shaw, Chattanooga, Tenn.—p. 878.
- Histamine in Treatment of Atopic Dermatoses. L. M. Smith, El Paso, Texas.—p. 883.
- Localized Amyloidosis of Skin: Report of Cases: Intracutaneous Congo Red Test as Diagnostic Aid. A. Dostrovsky and F. Sagher, Jerusalem, Palestine.—p. 891.
- Pustular Psoriasis in Negriss. H. Nieman, Dayton, Ohio.—p. 907.
- Iontophoresis of Copper Sulfate for Mycotic Infection.**—Greenwood and Rockwood say that for their 4 patients from whom material which produced cultures of identifiable fungous organisms was obtained from affected areas at their first visit the introduction of copper sulfate into the skin by iontophoresis was neither fungicidal nor fungistatic for the three pathogens found: *Trichophyton gypsum*, *Trichophyton purpureum* and *Epidermophyton inguinale*. When clinical improvement follows such treatment it must be due to some factor or factors other than the copper sulfate. One of the patients was given twenty-five treatments, and still it was possible to grow *T. gypsum* from scales taken at each examination and at the patient's last visit. In another patient the process was extending so rapidly after the sixth iontophoresis that compound ointment of benzoic acid was applied for ten days, and since then there

has been no obvious activity and all scales and cultures have been negative for *T. gypseum*. The third patient was treated for a month, and culture for *E. inguinale* was positive after each treatment. After treatment with compound ointment of benzoic acid the condition was clinically improved but still active mycologically for *E. inguinale*. The fourth patient was treated with copper sulfate iontophoresis for thirty-three days, and culture of material obtained during and at the conclusion of treatment showed *T. purpureum*.

Ringworm of Feet.—Jamieson and McCrea found known organisms in scrapings from the shoes of 40 per cent of patients with ringworm of the feet; the specimens from 25 per cent were definitely not infected, and those from 34 per cent were doubtfully infected. The organisms found in the shoes varied in number and type according to the length of time the shoe had been worn, the severity of the infection, the care and protection given the feet and the frequency with which stockings were changed. A study of whether the pathogen found in the scrapings from the skin and that in scrapings from the soles of the shoes were the same revealed accepted pathogens (*Trichophyton*, *Microsporon* and *Epidermophyton*) in the skin of 18 of 25 patients but in the scrapings from the shoes of only 12. The scrapings from the shoes of these 12 showed the same organisms found in cultures of scrapings from the skin. The number of possible pathogenic fungi (*Monilia*, *Actinomyces*, *Torula*, yeast and *Penicillium brevicaulis*) found in scrapings from the skin and from shoes was nearly equal, twenty and twenty-one respectively. In addition to the accepted and possible pathogens, various accepted nonpathogenic organisms were revealed in fourteen cultures of scrapings from the skin and in thirty-one cultures of scrapings from shoes. This result seems natural if the lack of care the shoe receives compared with that given the foot is considered.

Sulfaguanidine for Proctitis.—Cañazares and Morris used sulfaguanidine for the treatment of 6 patients with proctitis due to venereal lymphogranuloma. The daily dose of the drug was 24 Gm., divided into four equal doses. The period of treatment varied from twenty-seven to forty-seven days. All patients with simple inflammatory proctitis experienced subjective and objective improvement. Patients with narrow fibrotic stricture of the rectum were not improved; to them the drug was given preoperatively as a preparatory measure. Chemotherapy will not do more than heal erosions and ulcerations.

Archives of Neurology and Psychiatry, Chicago

46:761-946 (Nov.) 1941

- Vascular Supply of Spinal Ganglions. L. Bergmann, Boston, and L. Alexander, Durham, N. C.—p. 761.
Pathology of Amyotrophic Lateral Sclerosis: Fiber Analysis of Ventral Roots and Pyramidal Tracts of Spinal Cord. G. Wohlfart and R. L. Swank, Boston.—p. 783.
Studies in Diseases of Muscle: X. Prostigmine and Physostigmine in Treatment of Myasthenia Gravis. A. T. Milhorat, with technical assistance of W. E. Bartels, New York.—p. 800.
Neurologic Symptoms Following Extensive Occlusion of Common or Internal Carotid Artery. A. B. King and O. R. Langworthy, Baltimore.—p. 835.
*New Method for Treatment of Cystic Craniopharyngioma by Intraventricular Drainage. J. E. Scarff, New York.—p. 843.
Roentgenologic Changes in Bones in Cases of Pseudohypertrophic Muscular Dystrophy. B. S. Epstein and J. L. Abramson, Brooklyn.—p. 868.
Topical Arrangement Within Spinothalamic Tract of Monkey. T. A. Weaver Jr., Cincinnati, and A. E. Walker, Chicago.—p. 877.
Metrazol Convulsions in Treatment of Psychosis of Dementia Paralytica. Vivian Bishop Kenyon, Oswatomic, Kan.; M. Lozoff and D. Rapaport, Topeka, Kan.—p. 884.
*Dilantin Hyperplastic Gingivitis: Its Treatment and Prevention. D. E. Ziskin, L. R. Stowe and E. V. Zegarelli, New York.—p. 897.
Removal of Tumor Arising Anterior to Medulla. A. Ecker, Syracuse, N. Y.—p. 908.

Intraventricular Drainage for Cystic Craniopharyngioma.—Scarff treated 7 patients with suprasellar cysts by internal drainage into the cerebral ventricles. The basic principle of the new method is that it establishes a communication between the dome of the cyst and the floor of the lateral ventricle. Such an opening, if adequately made, will probably remain patent, allowing permanent drainage of the secretions issuing from the lining of the cyst into the cerebrospinal fluid, which carries away the secretions in its regular circulation. In selected instances (with a cystic craniopharyngioma large

enough to push up and thin out the floor of the lateral ventricles) the method promises better results than those that have been obtained by draining the contents of the cyst.

Phenytoin Hyperplastic Gingivitis.—Ziskin and his associates studied the gums of 14 epileptic patients, aged from 9 to 44 years, taking phenytoin sodium daily. Three boys, aged 8, 13 and 17 years, respectively, whose seizures were controlled with phenobarbital, were included for comparison. The chief complaints of the patients receiving phenytoin sodium were bleeding from the gums, enlargement of the gums and difficulty in mastication. Without therapy, phenytoin gingivitis progresses steadily. As proliferation progresses, the teeth are moved out of their natural alignment, and the interseptal bone may be resorbed, producing looseness and sometimes loss of the teeth. If the hyperplastic tissue is extracted the appearance of the gums returns to normal for a time without further treatment. Vigorous massage of the interdental papillae or surgical intervention followed by massage was more successful. Gingival treatment should probably be begun when phenytoin therapy is started. Administration of the drug need not be discontinued because of the gingival hyperplasia. Other sedatives used in the control of epileptic seizures do not stimulate the gums to hyperplasia. The resemblance of the phenytoin gingival hyperplasia to the hypertrophy seen in scurvy is superficial; the hypertrophy in scurvy is caused by swelling and not by hyperplasia as it is in phenytoin gingivitis. Pain, marginal necrosis of the gums and occasional petechial hemorrhage are absent in phenytoin hyperplasia, as are constitutional purpura and soreness of the joints.

Delaware State Medical Journal, Wilmington

13:181-198 (Sept.) 1941

- Psychosomatic Medicine and the General Physician. E. Weiss, Philadelphia.—p. 181.
Osteomalacia. H. G. Hadley, Washington, D. C.—p. 184.

Diseases of Eye, Ear, Nose and Throat, Chicago

1:289-324 (Oct.) 1941

- Present Status of Roentgen Therapy in Otologic Disease. R. Schilling, New York.—p. 294.
Visual Psychology in War Time. P. Fridenberg, New York.—p. 298.
*Ethmosphenoidal Epiglottidean Syndrome Interfering with Voice Dynamics. L. Felderman, Philadelphia.—p. 300.
Blunt Injuries to Eye and Adnexa. E. E. Grossmann, Camp Hulen, Texas.—p. 309.
Deep Infections in Neck. S. Iglauer, Cincinnati.—p. 313.

Ethmosphenoidal Epiglottidean Syndrome and Voice Dynamics.—Felderman describes an impairment of the vocal mechanism, ethmosphenoidal epiglottidean syndrome, that he encountered over a decade in 67 patients. He believes the syndrome to be more frequent than his observations indicate. The patients complain, usually in the morning, that they are not in "good voice." The alteration in voice and the hoarseness clear up during the day. Vocalization and swallowing usually clear up the effete mass that has accumulated during the night. The patient finds it difficult to start phonation, and his throat tires quickly. Pus may be found in the nasopharynx. Partial or total loss of taste or smell, a ticklish and tight feeling about the throat and blocking of the ears, with or without spasmodic cough, are some of the symptoms. Indirect pressure on Jacobson's nerve may give rise to otic symptoms. Patients with the syndrome also show a faint redness of the tympanic membrane, with or without a corresponding impairment in hearing. Less frequently they hear tingling bells, an echo, a vibration or the reechoing of a note in lesser or greater intensity. Another group of symptoms, mostly pharyngeal, arises when the muscles of the pharynx and its nerve supply are involved. If pressure on the laryngeal structure from even a trivial amount of pus is present it is sufficient to interfere with the normal emission of sounds. In the beginning the patient may rid himself of the pus by coughing. Later pus accumulates in larger quantities and remains in evidence when the epiglottis is examined. The accumulated pus pressing on the vallecula of the epiglottis is sufficient to upset the normal working balance of the intrinsic group of muscles. To a singer, the "head cold," if not treated properly, is one of the most devastating of human maladies, as it may leave an infective focus in the ethmosphenoidal area.

The syndrome has been mistakenly diagnosed as pachydermia of the larynx, prolapse of the laryngeal ventricle, singers' nodules, hemorrhage of the vocal cords, arthritis, perichondritis of the larynx, thyroid disorders, syphilis and as early tuberculosis and cancer of the larynx. It takes eight to ten weeks for the voice to become normal again after surgical or non-surgical treatment. The downward gravitation of the infection into the many inaccessible and complex structures makes it difficult to eradicate. When a mechanical obstruction exists the most essential and conservative surgical intervention is indicated. Infected tonsils should be removed and dental caries treated. In formulating a plan of nonsurgical treatment, one should correct any endocrine and vitamin deficiencies and allergic tendencies. Autogenous vaccine has been helpful. A mild germicide (0.2 or 0.1 of 1 per cent silver picrate in 7.5 per cent dextrose solution) will diminish the production of pus without paralyzing the ciliary activity of the nose.

Endocrinology, Springfield, Ill.

29:291-482 (Sept.) 1941. Partial Index

- Effect of Pituitary Growth Substance on Development of Rats Thyroid-ectomized at Birth. Theodora Nussmann Salmon, New York.—p. 291.
- Profound Vascular Changes Induced in Uterus of Castrated Rabbit by Combinations of Estradiol Benzoate and Progesterone. J. Gillman, Johannesburg, South Africa.—p. 336.
- Effect of Acute Estradiol Overdosage on Uterus of Guinea Pig. C. Dosne, Montreal, Canada.—p. 352.
- Comparative Estrogenic Potency of Diethylstilbestrol, Estrone, Estradiol and Estriol: II. Uterine and Vaginal Changes in Infantile Rats. J. L. Sealey and C. W. Sondern, Kansas City, Mo.—p. 356.
- Comparative Studies of Effects of Estradiol and Stilbestrol on Blood, Liver and Bone Marrow. D. Castrodale, Olga Bierbaum, E. B. Helwig and C. M. Macbryde, St. Louis.—p. 363.
- Effect of Estrogen on Permeability of Uterine Capillaries. O. Hechter, L. Krohn and J. Harris, Los Angeles.—p. 386.
- Effect of Testosterone Propionate on Mitotic Activity of Adrenals in Intact Immature Female Rat. I. T. Nathanson and A. M. Brues, Boston.—p. 397.
- Forty-Eight Hour Response of Immature Male Rat to Androgens. R. R. Greene and M. W. Burrill, Chicago.—p. 402.
- Fractionation of Neutral Urinary Steroids. G. Pincus and W. H. Pearlman, Worcester, Mass.—p. 413.
- Influence of Adrenal Preparations on Basal Metabolism and Specific Dynamic Action. Katharine A. Brownell and F. A. Hartman, Columbus, Ohio.—p. 430.
- Reversal of Fatigue in Adrenalectomized Rat by Glucose and Other Agents. D. J. Ingle and F. D. W. Lukens, Philadelphia.—p. 443.
- Action of Nocuous Agents on Insulin and Adrenalin Sensitivity, and on Glucose Tolerance. G. Masson, Montreal, Canada.—p. 453.
- Some Effects of Constant Intravenous Injection of Potassium Chloride Solutions in Normal Conscious Dogs. H. M. Schamp, Chicago.—p. 459.
- Influence of Thyroid on Vagoinulin and Sympatheticoadrenal Systems. E. Gelhorn and J. Feldman, Chicago.—p. 467.

Journal of Allergy, St. Louis

12:523-638 (Sept.) 1941

- Active Anaphylaxis in Chick Embryo: Preliminary Report. F. W. Wittich, Minneapolis.—p. 523.
- Use of Sulfonamide Drugs in Bronchial Asthma: Preliminary Report of Twenty-Three Cases. L. Unger, Chicago.—p. 528.
- Use of Bovine Antitoxin for Prophylaxis of Tetanus. J. Glaser, Rochester, N. Y.—p. 537.
- Immunologic Studies with Conjugated Ragweed Pollen Extracts. Margaret B. Strauss and W. C. Spain, New York.—p. 543.
- Studies on Blocking Antibody of Cooke in Treatment of Hay Fever. Margaret A. Scully and F. M. Rackemann, Boston.—p. 549.
- Abortion After Grass Pollen Injection. N. Francis, Rochester, N. Y.—p. 559.
- Studies in Epinephrine: Recovery of Epinephrine Injected Intravenously and Subcutaneously. S. S. Bullen and W. R. Bloor, Rochester, N. Y.—p. 564.
- Pollen Studies: Contrast Color Method of Examining Unstained Pollen Grains. R. I. Alford, New York.—p. 572.
- Henoch's Purpura Based on Food Allergy: Report of Two Cases. S. F. Hampton, St. Louis.—p. 579.
- A 1:500 Epinephrine in Gelatin: Discussion of Its Action, Advantages and Disadvantages. S. D. Lockey, Lancaster, Pa.—p. 592.
- Psyllium Seed Sensitivity: Case Report. M. S. Ascher, Detroit.—p. 607.
- Allergic Skin Reactions to Mammalian Serums. F. A. Simon, Louisville, Ky.—p. 610.
- Absorption of Injected Pollen Antigens: Comparison of Subcutaneous and Intramuscular Routes. S. J. Levin and L. E. Heideman, Detroit.—p. 616.

Journal of Clin. Endocrinology, Springfield, Ill.

1:633-710 (Aug.) 1941

- Testosterone Therapy of Eunuchoids: II. Clinical Comparison of Parenteral Implantation and Oral Administration of Testosterone Compounds in Male Eunuchoidism. R. F. Escamilla and H. Lisser, San Francisco.—p. 633.
- Stilbestrol Induced Testicular Degeneration in Hypersexual Males. C. W. Dunn, Philadelphia.—p. 643.
- Results of Treatment in Forty Selected Cases of Cryptorchism. N. H. Einhorn and L. G. Rountree, Philadelphia.—p. 649.
- Methyl Testosterone: IV. Observations on Hypermetabolism Induced by Methyl Testosterone. R. Jones, E. P. McCullagh, D. R. McCullagh and G. W. Buckaloo, Cleveland.—p. 656.
- Effect of Female Sex Hormone on Volume of Seminal Fluid in Man. N. J. Heckel and C. R. Steinmetz, Chicago.—p. 664.
- Colorimetric Determination of Neutral Steroids (Hormones) in Twenty-Four Hour Sample of Human Urine (Pregnandiol; Total, Alpha and Beta Alcoholic and Nonalcoholic 17-Ketosteroids). N. B. Talbot, R. A. Berman, E. A. MacLachlan and J. K. Wolfe, Boston.—p. 668.
- Prophylactic Implantation of Estrogens in Ovariectomized Women. U. J. Salmon, S. H. Geist and R. I. Walter, New York.—p. 674.
- Effective Therapy of Menopause Using Estrogen in Lower Dosage. P. M. Joffe, Paterson, N. J.—p. 677.
- Pitressin Tannate Therapy in Diabetes Insipidus. G. W. Thorn and Kay E. Stein, Baltimore.—p. 680.
- Simmonds' Disease with Craniopharyngioma. J. E. Farber, K. Goldstein and W. F. Beswick, Buffalo.—p. 688.
- Contributions from United States of America to Endocrinology. E. L. Sevringhaus, Madison, Wis.—p. 691.

Journal Industrial Hygiene & Toxicology, Baltimore

23:353-414 (Oct.) 1941

- Compensation of Occupational Diseases. L. Teleky, New York.—p. 353.
- *Industrial Manganese Poisoning. R. H. Flinn, P. A. Neal, Bethesda, Md., and W. B. Fulton, Harrisburg, Pa.—p. 374.
- Effects of Carbon Disulfide on Blood Corpuscles. H. Brieger, Philadelphia.—p. 388.
- Dropping Mercury Electrode for Lead Analysis. E. C. Barnes and H. W. Speicher, East Pittsburgh, Pa.—p. 397.
- Chemical Changes of Methyl Bromide in Animal Body in Relation to Its Physiologic Effects. D. D. Irish, E. M. Adams, H. C. Spencer and V. K. Rowe, Midland, Mich.—p. 408.

Industrial Manganese Poisoning.—According to Flinn and his co-workers, 11 of 34 men who had worked or were working in an atmosphere containing manganese had varying degrees of chronic manganese poisoning. Ten of the 11 men complained of lassitude, drowsiness, tremor of the body or the extremities, disturbances of gait and slight dyspnea; 9 of muscular weakness and muscular cramps; 8 of disturbances in speech and sexual function; 7 of metallic taste; 6 of vertigo, paresthesia and palpitation; 5 of loss of appetite, muscular pain, twitching of fingers and headache; 4 of articular pains and increased perspiration; 3 of salivation, impulsive weeping and laughter, and 2 of difficulty in swallowing, violent temper and nausea. A low leukocyte count with a reduced percentage of neutrophilic leukocytes was a significant finding, but the authors do not know whether or not this occurs early enough to be used as a criterion for removing a worker from exposure to manganese. As with other occupational diseases, the first step in the diagnosis is to obtain the occupational history and knowledge of any diseases associated with such a history. From the study of the course of the 11 patients it appears that many of the symptoms will disappear or regress if the worker is removed from contact with manganese shortly after the onset of symptoms. Some residual disturbances in gait and speech may remain. Well advanced manganese poisoning is a permanent crippling disease, particularly of the legs. Many of the symptoms will improve slowly, with occasional remissions, but the use of the legs is only partially recovered. Quarterly physical examinations should be made of all employees who work in an atmosphere of manganese dust, and any workers showing signs of early poisoning (drowsiness, languor, muscular cramps, twitching or tremor) should be transferred to an environment free of manganese until the hazard has been controlled. Later symptoms and signs (disturbances in gait and speech) may mean that the disease has progressed too far to be relieved by removing the subject from exposure to manganese. Engineering control methods in general use in dusty trades are effective in preventing the dispersal of manganese dusts.

Journal of Lab. and Clinical Medicine, St. Louis

26:1867-2014 (Sept.) 1941

- Allergy of Abdominal Organs. M. Walzer, Brooklyn.—p. 1867.
Familial Nonreaginic Food Allergy: Its Specific Diagnosis and Treatment. A. F. Coca, Oradell, N. J.—p. 1878.
Left Ventricular Failure Due to Essential Hypertension. N. Flaxman, Chicago.—p. 1891.
Acute Edematous Pancreatitis: Case Presentation and Clinical Discussion of Serum Amylase Test. E. F. Lewison, Baltimore.—p. 1901.
High Incidence of Infective Stools in Small Outbreak of Infantile Paralysis. G. Y. McClure, Albany, N. Y.—p. 1906.
Behavior of Recipient's Leukocyte Count Following Transfusion of Preserved Blood. J. A. Graham and W. M. Fowler, Iowa City.—p. 1911.
Effects of Decreased Temperature on Activity of Intact Muscle. W. W. Tuttle, Iowa City.—p. 1913.
Study of Therapeutic Effect of Sulfapyridine in Pneumococcus Infected Mice in Atmospheres of Varying Oxygen Tension. A. L. Barach and N. Molomot, New York.—p. 1915.
Gold Colloid and Colloids of Other Heavy Metals in Treatment of Rheumatoid Arthritis. J. M. Tarsy, Brooklyn.—p. 1918.
Relation of Nasopharynx to Ulcerative Colitis: Preliminary Report. S. Weiss, A. Slinger and S. Goodfriend, New York.—p. 1925.
Effects of Insulin, Metrazol and Electric Shock on Blood Pyruvate, Lactate and Glucose. K. A. C. Elliott, T. D. Rivers, F. H. Elliott and B. Platt, Philadelphia.—p. 1928.
Blood Specific Gravity Studies: Relationship of Specific Gravity of Whole Blood to Specific Gravity of Plasma, Red Blood Cell Count, Hematocrit and Hemoglobin as Indicators of Hemoconcentration. C. T. Ashworth and G. Adams, Dallas, Texas.—p. 1934.
Indoluria in Rheumatoid Arthritis. E. Neuwirth, New York.—p. 1939.
Iodine Content of Blood, Urine and Saliva of Normal Persons in New York City Area. M. Bruger, J. W. Hinton and W. G. Lough, New York.—p. 1942.

27:1-130 (Oct.) 1941

- Experimental Study of Lymphocytic Response in Thyrotoxicosis. L. A. Turley and K. M. Richter, Oklahoma City.—p. 1.
Statistical Study of Temperatures in Hypoglycemic Coma. Esther Bogen Tietz, Cecile Nadler and Edith Klempner, Cincinnati.—p. 11.
Serologic Diagnosis in Histologically Proved Chronic Syphilis: Analysis of 424 Neurospies. O. A. Brines and B. Juliar, Detroit.—p. 15.
Diagnosis of Peripheral Arterial Obstruction. S. S. Samuels, New York.—p. 19.
Sensitization Induced by Tetanus Toxoid, Alum Precipitated. H. Gold, Chester, Pa.—p. 26.
Localization and Concentration of Staphylococcus Antitoxin in Areas of Rabbit's Skin. R. H. Rigdon, Memphis, Tenn.—p. 37.
*Bacteremia Produced by Aerobic, Gram-Negative Sporulating Bacillus. A. Bondi Jr., E. H. Spaulding and J. A. Kolmer, Philadelphia.—p. 41.
Separation of Coagulant from Toxic Principles of Venom of Australian Tiger Snake (*Notechis Scutatus*), with Remarks on Mode of Action of Coagulant. S. Rosenfeld and J. Rubinstein, Brooklyn.—p. 45.
Studies on Detection of Abscesses and Tumors: III. Concentration and Detection of Radioactive Substance in Abscesses. H. H. Kroll, S. F. Strauss and H. Necheles, Chicago.—p. 50.
Studies in Absorption of Undigested Protein: IX. Absorption from Stomach and Esophagus. M. Harten, I. Gray, S. Livingston and M. Walzer, Brooklyn.—p. 54.
Identification of Blastomycoides Histolytica in Three Infections of Central Nervous System. Rebecca A. Holt, Richmond, Va.—p. 58.
*Chemical Studies in Delirium Tremens. C. Cohn, Philadelphia.—p. 63.
Effect of Intravenous Administration of Phosphate Solution in Normal Rabbits. I. Greenfield, Brooklyn.—p. 68.

Bacteremia Produced by Aerobic Bacillus.—Bondi and his associates isolated an aerobic, gram-negative, spore-forming bacillus from the blood of 5 hospitalized patients. The bacillus had no serologic relationship to *Alcaligenes fecalis*. Over a period of five months the bacillus was isolated nine times: once from each of 3 patients, twice from 1 and four times from 1 patient. It was isolated also from the bone marrow and from the spleen at the necropsy of the last patient nine days after the last blood culture was made. The strains in all 5 patients were identical; evidently they comprised a single species. The consistency with which this bacillus was isolated in cultures of blood from the 1 patient convinced the authors that they were not dealing with an ordinary contaminant but with an actual inhabitant of the blood stream. They describe this bacillus and report the results of serologic and pathogenic studies.

Chemical Studies in Delirium Tremens.—Cohn studied the blood constituents of 15 male patients with delirium tremens on admission and after recovery. Treatment varied, but generally it consisted in giving sodium chloride, fluids, thiamine hydrochloride and nicotinic acid orally or parenterally. On admission the serum chloride and carbon dioxide combining power were below normal in nearly all patients. Determinations of total base and available fluid showed low or low normal values. Hemoglobin and serum protein concentrations and the hematocrit values were increased. In the spinal fluid the amount

of chloride was decreased and that of protein increased. On recovery of the patient the concentrations of the substances studied returned to normal, with the occasional exception of the concentration of the serum chloride. All but 1 patient recovered; this patient died within twenty-four hours of admission from lobar pneumonia. Recovery was accompanied by a restoration of body fluids and electrolytes to normal composition. Delirium tremens should be treated by methods which restore fluid and salt to the body.

Journal of Nutrition, Philadelphia

22:333-438 (Oct.) 1941. Partial Index

- Influence of Plane of Nutrition and of Environmental Temperature on Relationship Between Basal Metabolism and Endogenous Nitrogen Metabolism Subsequently Determined. R. Treichler and H. H. Mitchell, Urbana, Ill.—p. 333.
Pathology of Riboflavin Deficiency in the Rat. J. H. Shaw and P. H. Phillips, Madison, Wis.—p. 345.
Vitamin B Complex and Fat Metabolism. J. C. Forbes, Richmond, Va.—p. 359.
Observations on Induced Caries in Rats: III. Effect of Fluoride on Rat Caries and on Composition of Rats' Teeth. F. J. McClure, Bethesda, Md.—p. 391.
Studies on Rat Growth Assay Method for Riboflavin. H. R. Street, New York.—p. 399.
Riboflavin Content of Fish Products. F. L. Billings, J. Biely, H. Fisher and C. Hedreen, Vancouver, B. C., Canada.—p. 425.
Effect of Autoclaving on Nutritive Value of Proteins in Cottonseed Meal. H. S. Olcott, Albany, N. Y., and T. D. Fontaine, New Orleans.—p. 431.

Journal of Pediatrics, St. Louis

19:289-436 (Sept.) 1941

- General Considerations: Certain Problems of Puberty and Adolescence. L. K. Frank, New York.—p. 294.
Some Observations on Growth and Development of Adolescent Children. W. W. Greulich, Cleveland.—p. 302.
Examination of the Adolescent Female. J. L. Baer, Chicago.—p. 315.
Menstrual Abnormalities of Adolescence. E. L. Sevringhaus, Madison, Wis.—p. 319.
Endocrine Problems in Adolescence. E. Shorr, New York.—p. 327.
Standard Metabolism of Adolescence. B. Webster, Helen Harrington and L. M. Wright, New York.—p. 347.
Obesity in Relation to Puberty. Hilde Bruch, New York.—p. 365.
What to Do About the Fat Child at Puberty. F. W. Schlutz, Chicago.—p. 376.
Athletic Activity at Puberty, with Special Reference to the Cardiac and Tuberculous Patient. S. Gibson, Chicago.—p. 382.
Sexual Education of the Adolescent. G. J. Mohr, Chicago.—p. 387.
Psychologic Aspects of Adolescence. D. A. Thom, Boston.—p. 392.
Use of Bovine Antitoxin for Prophylaxis of Tetanus. J. Glaser, Rochester, N. Y.—p. 403.

19:437-578 (Oct.) 1941

- Physiology and Anatomy of Respiratory System in Fetus and Newborn Infant. W. F. Windle, Chicago.—p. 437.
Neurotropic Virus Diseases of Man. A. B. Sabin, Cincinnati.—p. 445.
Congenital Heart Disease and Electrocardiogram. G. Eisenberg and S. Gibson, Chicago.—p. 452.
Clinical Study Concerning Value of Biolac: I. As Suitable Food Substance: II. As Source of Available Iron for Infants. R. C. Eley, Boston.—p. 470.
*Cutaneous Reactions with Specific Soluble Substance in Infants and Children. R. Meyer and B. W. Carey, Detroit.—p. 481.
*Effect of Honey on Calcium Retention in Infants. E. M. Knott, C. F. Shukers and F. W. Schlutz, Chicago.—p. 485.
Influence of Diet of Newborn Infant on Prothrombin Index. S. S. Gellis and R. A. Lyon, Cincinnati.—p. 495.
Prothrombin in Newborn Infant: IV. Further Observations on Prothrombin Response to Intravenous Administration of Water Soluble Naphthoquinone. S. Kove and H. Siegel, New York.—p. 503.
Miscellaneous Notes on Rat-Bite Fever: Report of Two Cases, Review of American Reports from 1931 to 1940, Observations on Isolation of *Spirillum minus* and Results of Standard Serologic Tests During Rat-Bite Fever. P. V. Wolley Jr., Portland, Ore.—p. 513.
Beriberi in Male Child Two and One-Half Years of Age. C. G. Kerley and E. J. Lorenze, New York.—p. 526.
Nonhemolytic Streptococcus Ophthalmitis, Parotitis and Meningitis in Premature Infant: Report of Case. M. J. Hurst and P. S. Astrowe, Kansas City, Mo.—p. 529.
Recovery from Two Attacks of Meningitis Caused by Different Organisms. H. G. Morton and R. W. Roberts, Durham, N. C.—p. 534.
Parental Education in Mental Hygiene. W. H. Missildine, Eagle Grove, Iowa.—p. 536.
Tuberculin Patch Test (Vollmer) on BCG Vaccinated and Control Children. I. S. Neiman, S. R. Rosenthal and W. G. Motel, Chicago.—p. 540.

Cutaneous Reactions to Specific Soluble Substance.—Meyer and Carey used injections of pneumococcus capsular carbohydrate, that is the Francis test, for determining the need of serum therapy in 42 infants and children with typed pneumococcus pneumonia. The results of the test, they say, confirm

its value for controlling the dose of serum in infants and children. However, in their experience the results of the test after chemotherapy with sulfapyridine or sulfathiazole have been irregular and unpredictable. When patients were first treated with serum it was observed that when the result of the Francis test became positive the areas that had been previously injected with specific soluble substance and showed negative results showed typical erythema and wheal reactions after the last dose of serum. Thereafter only one cutaneous test was administered before any serum was given, and the area was observed after each dose of serum. Typical reactions, when they occurred, were usually seen five to fifteen minutes after serum had been administered. It was observed that if single doses of serum were limited to 5 cc. fewer reactions (fever and chills) occurred. In the later cases when the result of the Francis test became positive administration of serum was discontinued. Much smaller amounts of serum were therefore used, with apparently comparable therapeutic effects. The positive reaction is probably due to a local union of antigen and antibody. The time and the intensity of cutaneous reactions varied greatly in the patients given only chemotherapy, but in the patients given serum strong reactions developed and persisted throughout their stay in the hospital.

Effect of Honey on Calcium Retention.—Knott and his associates determined the effect that feeding corn syrup and honey in milk formulas had on the retention of calcium in infants. They found that the average retention of calcium was always higher if honey was included in the formula. The increased retention occurred with both low and high intakes of vitamin D and regardless of the type of milk fed or whether or not lactic acid was used. Further analysis shows that while the favorable influence of honey occurred regardless of other operative factors its magnitude tended to decrease as other beneficial factors were employed. This is to be expected, as each infant has an upper level of optimal response. But despite these factors the use of honey could still improve calcium retention. In view of the results the authors conclude that honey is a carbohydrate which is well suited to the needs of the infant and therefore probably deserves wider use in infant diets.

Journal of Pharmacology & Exper. Therap., Baltimore

72:311-426 (Aug.) 1941. Partial Index

- Response of Sulfapyridine-Resistant Pneumococci to Hydroxyethylapocupreine. L. H. Schmidt and Clara L. Sesler, Cincinnati.—p. 311.
Studies on Shock Induced by Hemorrhage: I. Effect of Thiamine on Survival Time. W. M. Govier and C. M. Greer, Nashville, Tenn.—p. 317.
Id.: II. Effect of Thiamine on Disturbances of Carbohydrate Metabolism. W. M. Govier and C. M. Greer, Nashville, Tenn.—p. 321.
Histone Zinc Insulin—Its Pharmacologic Characteristics and Its Application in Treatment of Diabetes Mellitus. C. A. Barnes, T. C. Cuttle and G. G. Duncan, Philadelphia.—p. 331.
Quantitative Gastrointestinal Absorption and Renal Excretion of Propylene Glycol. W. Van Winkle Jr., San Francisco.—p. 344.
Production in Cultures Containing Sodium Paranitrobenzoate of a Substance That Affects Action of Sulfathiazole. J. K. Miller, Albany, N. Y.—p. 354.
Effect of Posterior Pituitary Preparations on Large Intestine of Unanesthetized Dog. E. Larson, Philadelphia.—p. 363.
Antagonistic Effect of Asphyxia to Curare Paralysis of Vagus Nerve. H. Mautner and A. Luisado, Waltham, Mass.—p. 386.

73:1-118 (Sept.) 1941. Partial Index

- Sweat Response to Drugs with Nicotine-like Action. J. M. Coon and S. Rothman, Chicago.—p. 1.
Local Anesthetic Activity of Certain Derivatives of A and B Naphthol. E. J. Fellows, R. W. Cunningham and A. E. Livingston, Philadelphia.—p. 27.
Differential Excretion of Bromide and Chloride Ions and Its Role in Bromide Retention. O. Bodansky and W. Modell, New York.—p. 51.
Studies of Toxicity and Pharmacology of Pantothenic Acid. K. Unna and J. G. Greslin, Rahway, N. J.—p. 85.
Studies on Relation of Drug Addition to Autonomic Nervous System: Results of Cold Pressor Tests. C. K. Himmelsbach, Lexington, Ky.—p. 91.
Pain Threshold Measurements in Dog. H. L. Andrews and W. Workman, Lexington, Ky.—p. 99.
Quantitative Comparisons of Activity of Sulfanilamide, Sulfapyridine, Sulfathiazole and Sulfadiazine Against *Escherichia Coli* in Vivo and in Vitro. H. J. White, J. T. Litchfield Jr. and E. K. Marshall Jr., Baltimore.—p. 104.

Journal of Thoracic Surgery, St. Louis

11:1-130 (Oct.) 1941

- Pulmonary Abscess: Specific Method of Treatment Applicable to Both Acute and Chronic Lesions. F. B. Gurd, Montreal, Canada.—p. 1.
Anatomic Changes in Lungs Following Thoracoplasty: Study of 134 Autopsy Cases. O. Auerbach, Staten Island, N. Y.—p. 21.
*Surgery in Pulmonary Tuberculosis: Study of Collapse Therapy, with Special Reference to Thoracoplasty, Based on Results of Thirteen Years. R. Adams, Boston, and P. Dufault, Rutland, Mass.—p. 43.
*Thoracoplasty for Tuberculosis: Late Results. G. F. Skinner, L. Macpherson and Irene Allen, St. John, N. B., Canada.—p. 54.
Analysis of 100 Consecutive Cases of Thoracoplasty with No Operative Mortality. R. H. Dieffenbach, Newark, N. J., and A. D. Crecca, Verona, N. J.—p. 65.
Analysis of 104 Cases of Thoracoplasty for Pulmonary Tuberculosis. G. G. Finney, Baltimore.—p. 76.
Results of Thoracoplasty. H. Meltzer, Ninette, Man., Canada.—p. 84.
Thoracoplasty in Bilateral Pulmonary Tuberculosis. A. M. Vineberg, D. Ackman and M. Aronovitch, Montreal, Canada.—p. 95.
Results in Ninety Consecutive Thoracoplasties for Pulmonary Tuberculosis. A. H. Aufses, New York.—p. 98.
Rest and Collapse in Pulmonary Tuberculosis. D. Salkin and A. V. Cadden, Hopemont, W. Va.—p. 109.
New Classification of Pulmonary Tuberculosis. D. Salkin and A. V. Cadden, Hopemont, W. Va.—p. 126.

Surgery in Pulmonary Tuberculosis.—Adams and Dufault review the results following thoracoplasty on 241 consecutive patients submitted to operation during thirteen years. The last patient was operated on at least two years ago. Among the group considered there were 22 with tuberculous and mixed empyema. Of the entire group 144 were apparently cured. The tuberculosis of 11 was arrested, of 2 was apparently arrested, of 27 was quiescent, of 10 was unimproved and of 1 it was worse. The status of 8 is unknown, and of the 33 patients who died 28 did so from tuberculosis, 7 from empyema and 3 from a nontuberculous disease. Twelve with empyema were cured, 1 improved, 2 were worse or unimproved and 7 died.

Thoracoplasty for Tuberculosis.—According to Skinner and his associates, 226 patients had thoracoplasty between 1924 and 1941; 100 had it by the end of 1935. Of 50 operated on before 1933 24 are apparently still cured in 1941, 5 are improved, 2 are unimproved and 19 are dead. Of the 50 operated on during 1933, 1934 and 1935 30 are apparently cured in 1941, 2 are improved, 5 are unimproved and 13 are dead. Only a preliminary report is possible for the 126 patients operated on since 1935, but up to date 58 are apparently cured, 43 are improved, 17 have unsatisfactory results and 8 are dead.

New York State Journal of Medicine, New York

41:1891-1986 (Oct. 1) 1941

- Soldier's Heart. L. F. Bishop Jr., New York.—p. 1915.
*Evaluation of Surgical Treatment of Hypertension. G. J. Heuer and F. Glenn, New York.—p. 1922.
Control of Pain and Discomfort by Subcutaneous Injection of Oxygen. J. H. Evans, Buffalo.—p. 1927.
Differential Diagnosis of Conditions in Upper Part of Abdomen. M. A. Ramirez, New York.—p. 1934.
Cryptitis—Perianal and Perirectal Infections. F. L. Sullivan, Scotia.—p. 1940.
Cigaret Smoking in Pregnancy. F. J. Schoeneck, Syracuse.—p. 1945.
The Part of the Private Pediatrician in the School Health Program. W. E. Ayling, Syracuse.—p. 1949.

41:1987-2082 (Oct. 15) 1941

- New Medical Attack on So-Called "Mental" Disease. F. Kennedy, New York.—p. 2013.
Industrial Health: Periodic Examination. M. Woody, New York.—p. 2018.
Id.: New Medical Opportunities in National Defense Industries. C. D. Selby, Detroit.—p. 2023.
Industrial Health and the General Practitioner. L. D. Bristol, New York.—p. 2026.
Clinical Studies in Electrocardiography: IV. Value of Electrocardiogram in Coronary Thrombosis, with Special Reference to Localization of Infarct. A. Lieberman, J. Chasnoff and A. A. Goldbloom, New York.—p. 2032.
Incidence of Heart Disease in University Student Age Group. Muriel Cuykendall, Ithaca.—p. 2037.
Medical Diagnosis of Mental Defect. E. J. Humphreys, Thiells.—p. 2041.

Surgical Treatment of Hypertension.—Heuer and Glenn studied the results of operative procedures (19 anterior root sections, 12 supradiaphragmatic splanchnicotomies and 18 splanchnic resections with interruption of the first and second

lumbar ganglions) on 49 hypertensive patients. Such therapy is indicated because (1) a lowering of blood pressure has followed the operative procedures, (2) changes in the fundi have occurred and in many cases persisted, (3) headaches have been relieved for variable periods, (4) nervousness has been diminished and (5) early fatigue has been lessened. Twenty-six of the patients are alive from two months to six years and nine months after operation.

North Carolina Medical Journal, Winston-Salem

2:527-578 (Oct.) 1941

- First Ten Years of Duke University School of Medicine and Duke Hospital. W. C. Davison, Durham.—p. 527.
The Medical Profession and the Problem of Mental Disorder. J. Watson, Raleigh.—p. 532.
Public Health and National Defense. M. J. Rosenau, Chapel Hill.—p. 537.
Tumors of Larynx and Hypopharynx. L. H. Clerf, Philadelphia.—p. 539.
Appendicitis in Children. T. M. Watson, Greenville.—p. 541.
Practical Plan for Use of Vitamin K in Prevention of Hemorrhage in Newly Born Infant. R. B. Lawson, Chapel Hill.—p. 544.
Delayed Relaxation of Tendon Reflexes as Aid in Diagnosis of Myxedema. G. T. Harrell, Winston-Salem, and D. Daniel, Durham.—p. 549.
Health Problems in Area Surrounding Large Military Establishment. M. T. Foster, Fayetteville.—p. 552.
Cardiac Decompensation in Congenital Heart Disease: Report of Case. Dorothy B. Wyvell, Durham.—p. 557.

Northwest Medicine, Seattle

40:351-396 (Oct.) 1941

- Diabetes: Disturbance in Endocrine Regulation of Blood Sugar; Fundamentals of Physiology of Diabetes, Carbohydrate Utilization and Carbohydrate Tolerance; Endocrine Balance in Carbohydrate Metabolism. S. Soskin, Chicago.—p. 356.
Effect of Anterior Pituitary-like Substance on Carbohydrate Metabolism. B. Vidgoff and Rosa Kubin, Portland, Ore.—p. 361.
Indications for Gastroscopy. P. B. Nutter, Spokane, Wash.—p. 363.
Symptomless Period of Bronchial Foreign Bodies. P. Bailey, Portland, Ore.—p. 365.
Influence of Suggestion on Size of Bronchial Lumen: Bronchoscopic Study and Report of One Case. W. B. Faulkner Jr., San Francisco.—p. 367.
Cancer from Pathologist's Angle. W. Dock, New York.—p. 369.
Cosmetic and Functional Aspects of Bone Grafting in Mandibular Fractures. C. M. MacKenzie, Spokane, Wash., and D. H. Sharpless, Everett, Wash.—p. 372.

Oklahoma State Medical Assn. Jour., Oklahoma City

34:419-464 (Oct.) 1941

- Foreign Bodies of Air and Food Passages: Some Observations on Series of 220 Cases. L. C. McHenry, Oklahoma City.—p. 419.
Value of Frei Antigen of Chick Embryo Origin in Diagnosis of Lymphogranuloma Venereum. R. B. Greenblatt, Augusta, Ga.—p. 423.
The Practicing Physician and the Public Health Department. J. F. Hackler, Oklahoma City.—p. 425.
Hoarseness. G. L. Tracewell, Okmulgee.—p. 427.
Corneal Injuries and Complications. W. W. Mall, Ponca City.—p. 429.
Psychosomatic Medicine. H. M. Galbraith, Oklahoma City.—p. 431.

Philippine Medical Association Journal, Manila

21:423-480 (Sept.) 1941

- Taigan-Taigan Oil as Purgative for Sick Infants and Children. R. Guevara and A. P. Jongco, Manila.—p. 423.
Observations on Use of Sulfapyridine in Treatment of Pneumococcal Pneumonia Among Philippine Army Personnel. V. Luna, A. T. Cruz and C. B. Icasiano, Quezon, Tayabas.—p. 435.
Concept of Focal Infection in Ophthalmology. A. R. Ubaldo and G. de Ocampo, Manila.—p. 443.
*Encephalopathia Saturnina: Report of Case. J. Santillan, F. S. Soriano, Manila, and J. S. Ongjoco, Pasay.—p. 455.

Encephalopathia Saturnina.—Santillan and his associates believe that they are apparently reporting the first case of encephalopathia saturnina to occur in the Philippines. The patient started working in a large printing establishment in 1909. During the time of his connection with the firm he was always in contact with lead. He remembers that about two years after he was employed he began to have periodic attacks of dizziness and headache. He recalls two attacks of abdominal colic. After nineteen years of continuous work he had a sudden and severe convulsive attack. This attack was followed by loss of consciousness, and immediately after it he was unable to

talk or walk. He was obliged to stop working. Gradually, while at home, he recovered his speech, but even after twelve years without contact with lead he has never regained the full use of his right upper and lower extremities. The symptoms coincide with those described by Tanquerel des Planches and Westphal in lead encephalopathy of the apoplectic form. Lead poisoning, like all other occupational diseases, is compensable. The patient was given compensation for total and permanent disability.

Physiological Reviews, Baltimore

21:529-632 (Oct.) 1941

- Factors Affecting the Tests of Kidney Function. R. C. Herrin, Madison, Wis.—p. 529.
Anaphylaxis. C. A. Dragstedt, Chicago.—p. 563.
Antihormones. K. W. Thompson, New Haven, Conn.—p. 588.

Psychiatric Quarterly, Utica, N. Y.

15:621-874 (Oct.) 1941. Partial Index

- Critical Analysis of Insulin Therapy at Rochester State Hospital. W. Liberton, Rochester, N. Y.—p. 635.
The Retina and Ocular Tension During Prolonged Insulin Coma, with Autopsy Eye Findings. A. Gralnick, Central Islip, N. Y.—p. 648.
Some Observations on Cardiovascular Changes in Shock Therapy. H. Cleckley and D. B. Eggleston Jr., Augusta, Ga.—p. 662.
Electrocardiogram in Metrazol Therapy. L. Wender and A. Jezer, Hastings-on-Hudson, N. Y.—p. 680.
*Report on Subconvulsive Reaction to Electric Shock and Its Sequelae in Normal Subject. C. Watkins, E. J. Stainbrook and H. Löwenbach, Raleigh, N. C.—p. 724.
Electric Shock Therapy in Psychoses: Convulsive and Subconvulsive Methods. S. Androp, Catonsville, Md.—p. 730.
Artificial Fever Therapy in General Paresis with Electroencephalographic Studies. A. E. Bennett, P. T. Cash and C. S. Hoekstra, Omaha.—p. 750.
Results Obtained from Administration of 12,000 Doses of Metrazol to Mental Patients: Preliminary Report. M. Zeifert, Brooklyn.—p. 772.
Relation of Group of Highly Improved Schizophrenic Patients to One Group of Completely Recovered and Another Group of Deteriorated Patients. O. Kant, Worcester, Mass.—p. 779.
Mapharsen in Treatment of Therapeutic Benign Tertian Malaria. D. Whitehead and J. J. Dorcy, Utica, N. Y.—p. 790.
Rorschach Method as Prognostic Aid in Insulin Shock Treatment of Schizophrenics. Z. A. Piotrowski, New York.—p. 807.

Subconvulsive Reaction to Electric Shock.—Watkins and his associates point out that a volunteer, a physician of 25, was submitted to an electric subconvulsive shock. His behavior and experience during recovery were similar to those observed in patients with mental disease after convulsive shocks. The principal features of the volunteer's behavior were absence of somatic and mental complaints, amnesia and disorientation.

Public Health Reports, Washington, D. C.

56:1941-1980 (Oct. 3) 1941

- Our Inadequate Treatment of the Mentally Ill as Compared with Treatment of Other Sick People. V. H. Vogel.—p. 1941.
*Dermatitis from Cutting Oils. L. Schwartz.—p. 1947.
*Lead and Arsenic Content of Urines from Forty-Six Persons with No Known Exposure to Lead or Arsenic. S. H. Webster.—p. 1953.
*Rat-Bite Fever in Washington, D. C., Due to *Spirillum minus* and *Streptobacillus moniliformis*. C. L. Larson.—p. 1961.

Dermatitis from Cutting Oils.—Schwartz points out that soluble and insoluble cutting oils and greases used for lubricating and preserving the temper of cutting tools are the most frequent causes of dermatitis among machinists and metal workers. All petrolatum oils have a defatting action on the skin. Consequently a greasy skin with active sebaceous glands is less apt to be defatted than a dry skin. The comedos, folliculitis and boils caused by cutting oils and greases can be successfully treated and prevented by a daily change of work clothes and frequent washing of the affected parts. Pus should be evacuated surgically, and the judicious use of compresses of solutions of boric acid, mercury bichloride 1:1,000 or potassium permanganate 1:2,000 will usually clear up the condition. The allergic types of cutting oil dermatitis are best treated by removing the affected workers from contact with the offending agents. Antiseptic lotions should be used for the moist types; ointments for the dry chronic types; dressings of boric acid, Burrow's solution or mercury bichloride 1:1,000 for the acute moist types, and boric acid ointment, zinc ointment, Lassar's paste and coal tar preparations for the dry or dry eczematoid types of dermatitis. Workers with dry, defatted hands should apply a vegetable or animal fat ointment before and after work.

Urinary Content of Lead and Arsenic of Unexposed Persons.—Webster determined the urinary lead and arsenic concentration of the morning specimens of 46 persons (28 adults and 18 children) with no known exposure to lead arsenate. A wide concentration range was found. However, there was no uniformity among the different members of a given family. There was a close correspondence between specific gravity and phosphate concentration. Comparison of these lead and arsenic values with those of men and women living in an apple-growing locality with potential exposure to lead arsenate from the ingestion of apples having the residue from lead arsenate spray on their surfaces and/or from inhalation of lead arsenate dust, spray or particulate matter revealed about the same average values, but the averages were significantly lower for the groups not residing in the apple-growing district. No evidence was discovered to indicate that the urinary lead and arsenic content of children differs from that of adults.

Rat-Bite Fever in Washington, D. C.—Larson reports 3 cases of rat-bite fever observed in Washington, D. C.; from 1 patient *Leptospira morsus muris* and from 2 *Streptobacillus moniliformis* were isolated. The 3 cases furnish the first record of isolation of *L. morsus muris* from a patient in Washington and also the only instances of infection with *Streptobacillus* in the locality. From these cases the author finds that the clinical diagnosis of rat-bite fever may be difficult when certain cardinal features are absent, but this can be offset by employing proper laboratory methods for confirmation.

56:1981-2032 (Oct. 10) 1941

Doctors' Calls in Connection with Illness from Specific Diseases Among 9,000 Families, Based on Nationwide Periodic Canvasses, 1928-1931. Selwyn D. Collins.—p. 1981.

*Ornithodoros Hermsi and Relapsing Fever in Oregon. G. E. Davis.—p. 2010.

Ornithodoros Hermsi and Relapsing Fever in Oregon.—Davis points out that 2 cases of proved and 3 of suspected relapsing fever have been encountered in central Oregon. He collected 52 specimens of *Ornithodoros hermsi* from a hollow pine log in the immediate area in which the infection occurred. The ticks were tested in seven groups of 5 each and in three groups of 4, 6 and 7 each by allowing them to feed on white mice. Spirochetes were recovered from 6 of 10 test mice. The presence of relatively large numbers of *O. hermsi* in Douglas firs in Colorado and in the pine log in Oregon suggests that dwellings could be infested and that contact with decaying wood used as fuel or for lumber may be a source of infection.

Radiology, Syracuse, N. Y.

37:391-520 (Oct.) 1941

Intrathoracic Neurogenic Tumors. K. Kornblum and H. H. Bradshaw, Philadelphia.—p. 391.

Silicosis. G. Clement, Duluth, Minn.—p. 407.

Factors Involved in Production and Development of Silicotic Lesions. W. S. Lemon, Rochester, Minn.—p. 413.

*Twelve Year Review of X-Ray Therapy of Gas Gangrene. J. F. Kelly and D. A. Dowell, Omaha.—p. 421.

*Roentgen Radiation in Experimental Clostridium Welchii Infection (Gas Gangrene) in Dogs: Preliminary Report. A. H. Dowdy and R. L. Sewell, Rochester, N. Y.—p. 440.

Influence of Emotions on Esophageal Function: Comparison of Esophagoscopy and Roentgenologic Findings. W. B. Faulkner Jr., F. H. Rodenbaugh and J. R. O'Neill, San Francisco.—p. 443.

Acute (Primary) Coccidioidomycosis: Roentgen Findings in Group "Epidemic." R. A. Powers and Dorothy J. Starks, Palo Alto, Calif.—p. 448.

Roentgen Diagnosis of Neurinoma of Thorax. I. N. Odessky, Moscow, Soviet Union.—p. 454.

Carcinoma of Male Breast. M. D. Sachs, Portland, Ore.—p. 458.

Oral Carcinoma. W. E. Hoves and L. Bernstein, Brooklyn.—p. 468.

Depth Dose Calculation Wherein Absorption in Unit Volume in Depth, i. e., Volume Depth Dose, Is Index of Effective Radiation. W. H. Meyer, New York.—p. 476.

Cerebral Arteriography with Diodrast, Fifty per Cent. S. W. Gross, New York.—p. 487.

*Rhomboid Depression of Clavicle. S. Shulman, Far Rockaway, N. Y.—p. 489.

Roentgen Therapy for Gas Gangrene.—Kelly and Dowell assemble the data on twelve years of the roentgen treatment of gas gangrene. The decrease in mortality, they say, indicates that with irradiation the disease need no longer be considered serious. Two of their first 8 patients so treated died, but of 364 patients from all sources who were treated during the twelve years (ending with May 1940) with one or more roent-

gen treatments, 42 died, a mortality of 11.5 per cent. The mortality for 288 of the 364 patients given three or more treatments was 5.9 per cent. The diagnosis of the disease in 93 was based on clinical grounds, in 41 on clinical grounds and roentgen evidence of gas in the tissues and in 207 on laboratory evidence of *Clostridium welchii*, and the method of diagnosis for the remaining 23 was not stated. The number of deaths in these four groups was, respectively, 16, 7, 18 and 1. From an analysis of the data the authors conclude that the roentgen treatment of gas gangrene has a direct effect in preventing and curing the infection, and that (1) the administration of serum appears unnecessary, (2) irradiation is effective after serum therapy fails, (3) giving serum may even be harmful to the diabetic patient in whom gas gangrene develops, (4) giving serum may be harmful to aged patients and (5) roentgen therapy of gas gangrene has completely eliminated the necessity of extensive surgical intervention. Amputation and extensive débridement are seldom necessary. They should never be necessary if proper treatment is started early. The study stresses the need for the general use of roentgen therapy for inflammatory disease at the bedside, with an apparatus of adequate kilovoltage. Acute spreading peritonitis has been successfully treated by irradiation. Sulfanilamide should not be used during the roentgen treatment of acute inflammatory processes. The curative action of the roentgen rays is apparently due to the rays' nonspecific antitoxic effect. This antitoxic effect, resembling the nonspecific effect in preventing peritonitis after colonic and rectal operations, was first reported by the Ford Hospital group.

Gas Gangrene in Dogs.—Dowdy and Sewell produced a syndrome comparable to that of *Clostridium welchii* disease in man in 66 dogs. Irradiation had some therapeutic effect in combating the infection in 25 dogs as compared with 25 controls. The survival rates were 36 and 20 per cent, respectively. Preliminary studies on the effect of the time of treatment, the amount of treatment, the size of the dose and the kilovoltage show that they all have a bearing on the survival rate.

Rhomboid Depression of Clavicle.—Shulman calls attention to a normal anatomic landmark of the clavicle which ordinarily is not visible on the roentgenogram but which occasionally may be so well developed as to simulate destructive lesions of bone. It is important to differentiate such an anomaly from the various pathologic conditions (osteomyelitis, tuberculosis, syphilis and malignant neoplasms) known to involve the region of the clavicle. A comprehensive survey of the American literature disclosed only a single reference to the possible occurrence of this anomaly. Occasionally the rhomboid depression may be extremely deep and penetrate about halfway through the thickness of the clavicle. The outline of the upper margin of the defect is usually irregular, and its density is slightly increased. Under such conditions, the anomalous development of the depression appears as a large osseous defect and may easily be mistaken for a destructive process.

Review of Gastroenterology, New York

8:343-420 (Sept.-Oct.) 1941

Electrocardiographic Changes Following Hematemesis in Peptic Ulcer. D. Scherf, H. Reinstein and S. D. Klotz, New York.—p. 343.

Pathogenesis of Peptic Ulcer. I. W. Held, New York.—p. 350.

Ulcerative Colitis and Its Management. M. Kraemer, Newark, N. J.—p. 357.

Simulation of Bleeding Penetrating Duodenal Ulcer. M. Weingarten, New York.—p. 367.

Underweight: Problem in Treatment. H. A. Monat, Washington, D. C.—p. 371.

Management and Treatment of Acute Food Poisoning. T. G. Simonton, Pittsburgh.—p. 376.

Gastric Mucin Silver Iodide in Rectal and Colonic Therapy. A. G. Dujat, New York.—p. 381.

Remarks on "Material" and "Formal" Causes of Cancer. S. P. Reimann, Philadelphia.—p. 385.

X-Ray Diagnosis of Gastrointestinal Malignancy. J. S. Lehman, Philadelphia.—p. 386.

Surgery in Gastrointestinal Cancer. W. L. Martin, Philadelphia.—p. 387.

Cancer of Colon. N. V. Ludwick, Philadelphia.—p. 388.

Melanosis Coli. L. H. Block, Chicago, and B. L. Greene, Elgin, Ill.—p. 393.

Primary Carcinoma of Head of Pancreas: Clinical Observations. J. Friedenwald and T. H. Morrison, Baltimore.—p. 400.

Ruptured Peptic Ulcer Producing Jaundice by Pressure on Common Bile Duct. L. C. Kelly, New York.—p. 408.

Texas State Journal of Medicine, Fort Worth

37:331-386 (Sept.) 1941

- Present Status of Surgical Procedures on Biliary Tract R. R. Graham, Toronto, Canada—p. 335.
Surgical Treatment of Ureteral Stones H. M. Spence, Dallas—p. 340.
Plastic Construction of Artificial Vagina T. G. Blocker Jr., Galveston—p. 345.
Differential Diagnosis of Internal Derangement of Knee. W. A. Bishop Jr., Wichita Falls—p. 348.
Etiology and Symptomatology of Brucellosis. D. Neighbors, Fort Worth—p. 353.
Diagnosis of Brucellosis. F. T. McIntire, San Angelo—p. 355.
Brucellosis, a Public Health Problem. L. L. Terry, Galveston—p. 359.
Contracted Pelvis and Delayed Labor. E. D. Plass, Iowa City—p. 363.
Hypertrophic Pyloric Stenosis in Infants: Result of Birth Injury. J. G. Flynn, Houston—p. 367.
Ephedrine Sulfate Intranasally as Cause of Uterine Bleeding. Evelyn Gass Powers, Amarillo—p. 369.
Roentgen Examination as Diagnostic Procedure in Hemorrhage from Gastrointestinal Tract. G. W. Holmes, Boston—p. 372.

37:387-448 (Oct.) 1941

- Aims and Methods of Texas Pneumonia Control Program. J. Kopecky, San Antonio—p. 391.
Modern Study of Pneumonia Patient. W. G. Maddox, Dallas—p. 393.
Recent Advances in Treatment of Pneumonia. C. T. Stone, Galveston—p. 396.
Some Economy and Efficiency Devices in Tuberculosis Control Work. J. E. Johnson, Mineral Wells—p. 400.
Common Neurosurgical Operations for Relief of Pain. R. C. L. Robertson, Houston—p. 404.
Diabetes and Pregnancy. J. A. Clapp Jr., Houston—p. 408.
Management of Sterility in Female. R. E. Lee, Dallas—p. 414.
X Ray Therapy in Asthma and Hay Fever. C. F. Crain, Corpus Christi—p. 419.
Intraoral Radiation Therapy. P. E. Wigby, Houston—p. 422.
Reading Problems, Their Causes and Effects. L. H. Quinn, Dallas—p. 428.
Relation Between the Radiologist and the Referring Physician. R. T. Wilson, Austin—p. 433.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

49:527-598 (Oct.) 1941

- *Uterine Fibroids with Pregnancy. G. G. Thompson, Seattle—p. 527.
Bronchoscopy as Diagnostic Aid in Nontuberculous Pulmonary Disease. L. H. Clef, Philadelphia—p. 557.
Ectopic Pregnancy in Hawaii. O. L. Schattenburg, Honolulu, Hawaii—p. 562.
Pregnancy Tests of Past and Present. E. Henriksen, Los Angeles—p. 567.
Compression Fractures of Dorsolumbar Vertebrae. J. W. Gullikson and C. R. Anderson, Tacoma, Wash—p. 576.
Spontaneous Amputation of Cervix During Labor. R. D. Reekie, Spokane, Wash—p. 581.
Action of Iodine on Gorter and Action of Thyroactivator in Pathogenesis of Primary Gorter. Clinical, Laboratory and Experimental Observations. S. Brock, Chicago—p. 585.

Uterine Fibroids with Pregnancy.—From a study of one hundred and forty-four labors among 118 women with uterine fibromyoma whom Thompson encountered among two thousand consecutive private deliveries he concludes that fibroids do not negate pregnancy or nullify the chance of viable infants. The history (previous pregnancies, abortions, labors, menstruation and symptoms) seems the most important indicator, with the size of the fibroids a close second: The better the history the better the course, and the larger the fibroid the poorer the course. There was an increased incidence (10.8 per cent) of premature rupture of the membranes, premature labor, placenta previa, breech presentation and hemorrhage during pregnancy and labor and immediately post partum among the 118 women. Pain and tenderness during pregnancy indicated trouble. However, the trouble was grave in only a few women, and it was usually heralded and never calamitous or catastrophic for the mother. Therefore it seems that without the most serious deliberation a woman should never be informed that pregnancy is impossible because of fibroids and that a miscarriage (which occurred in only 6 among the group) will occur or that much trouble awaits her if she becomes pregnant. Likewise the removal of the uterus with the fibroids should never be urged or suggested—especially in a woman who desires children. The woman should be encouraged to keep her troublesome organ so that it may fulfil its physiologic function.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

14:307-342 (Oct.) 1941

- Value of Cooperation Between the Radiologist and the Gastroscopist. S. W. Davidson and J. D. Rose—p. 307.
Changes in Bones, Joints and Soft Tissues Associated with Disease or Injury of Central Nervous System. J. F. Brailsford—p. 320.
Mucous and Salivary Gland Tumors: Report on Series of Fifty Seven Cases, with Special Reference to Radium Treatment. M. Lederman—p. 329.
Construction of Universal Dosimeter with Notes on Its Use for Measurement of High Resistances. F. Happej—p. 336.

British Journal of Surgery, Bristol

29:1-164 (July) 1941

- Postoperative Complications of Pulmonary Lobectomy: Clinical and Experimental Study. F. J. S. Gower—p. 3.
Osteitis of Metatarsal Sesamoid Including Report of Case of Acute Pyogenic Osteomyelitis. R. Smith—p. 19.
Coxa Plana, with Special Reference to Its Pathology and Kinship. H. J. Burrows—p. 23.
Exomphalos: Radical Cure in Infant, Twenty Minutes Old. L. Rogers—p. 37.
Thoracocaudal Gastrectomy for Carcinoma of Thoracic Stomach. R. W. Raven—p. 39.
Earliest English Example of Bilateral Cervical Rib. A. J. E. Cave—p. 47.
Congenital Atresia of Bile Ducts. J. T. Chesterman—p. 52.
Surgical Treatment of Syringomyelia. C. Worster Drought, C. P. G. Wakeley and J. Shafar—p. 56.
Leontiasis Ossea. G. K. Kirkland—p. 74.
One Stage Operation for Hypospadias. G. Humby, foreword by T. T. Higgins—p. 84.
*Ischiofemoral Arthrodesis. H. A. Brittain—p. 93.
Collateral Venous Circulation in Case of Thrombosis of Inferior Vena Cava and Its Embryologic Interpretation. J. A. Keen—p. 105.
Intracapsular Fractures of Neck of Femur: Final Results of Seventy-Five Consecutive Cases Treated by Closed Method of Pinning. A. L. Eyre Brook and K. H. Pridie—p. 115.
Tumors of Small Intestine. J. E. Morison—p. 139.

Ischiofemoral Arthrodesis.—Brittain used ischiofemoral arthrodesis for 35 patients with tuberculosis, osteoarthritis or infective arthritis of the hip. Ischiofemoral arthrodesis afforded a high percentage of fusions in his patients. The operation can be offered any patient less than 65, provided that in tuberculosis the disease does not extend down into the ischium. Ischiofemoral arthrodesis is fusion between the ischium and the shaft of the femur in the region of the small trochanter. The operation consists in performing a subtrochanteric osteotomy at a previously selected site, passing the osteotome into the ischium in the same line for 1 inch (2.5 cm) and introducing a massive flat tibial bone graft, that is the entire medial surface of the tibia. One end of the graft is well implanted in the ischium and the other between the two fragments of the osteotomy. The limb is then abducted so that the lower fragment comes into contact with the ischium, and thus the graft is supported throughout its entire length. The one possible disadvantage to ischiofemoral arthrodesis, as to the iliofemoral operation, is that the disease may involve the graft. Bony fusion followed the first operation in 80 per cent of the author's patients. For 3 patients the operation had to be repeated; for 1 of these it was performed three times. The results with these 3 patients bring the percentage of fusions to 88. If fusion should not occur because the graft was passed too high into the diseased area, the operation can be repeated.

British Medical Journal, London

2:465-496 (Oct. 4) 1941

- Head Injuries in Motor Cyclists: Importance of Crash Helmet. H. Cairns—p. 465.
Congenital Bilateral Renal Hypoplasia, with Short Review of Literature: Case. J. E. Murray and R. A. Sandison—p. 471.
*Review of Dyspepsia in Army. C. A. Hinds-Howell—p. 473.
Crush Injury with Renal Failure and Recovery. G. Blackburn and W. W. Kay—p. 475.
*Bacteriology of Air Raid Wounds Examined Within Forty Eight Hours of Infection. E. T. C. Spooner—p. 47.
War Conditions and the Mental Health of the Child. F. Bodman—p. 486.

Dyspepsia in the Army.—Hinds-Howell cared for 804 patients with dyspepsia from October 1939 to December 1940. The symptoms of 80, or only 10 per cent, originated during service in the army; in 13 of the 80 the character of the symp-

toms was neurotic. The symptoms of 47 of the 91 Canadian patients developed after their arrival in England. Six patients were New Zealand soldiers. Of the 707 British patients 391 (55 per cent) presented definite evidence of peptic ulceration. The highest incidence of symptoms of duodenal ulcer was among soldiers between 20 and 30 years of age; the same was true of gastric ulcer, although the curve was flatter. Thirty-five had had an acute hemorrhage, 34 a perforated peptic ulcer and 29 an appendectomy, but the duodenal symptoms were relieved only for about two years. The onset of pain after meals was unreliable as a diagnostic factor. Vomiting, more common in soldiers than in civilians, was almost universal, and usually it was followed by partial or complete relief of symptoms. Men with proved ulcers are unfit for military service, but officers and occasionally noncommissioned officers or other useful men should be retained for home duty if arrangement for a suitable diet can be made.

Bacteriology of Recent Air Raid Wounds.—To determine whether pathogenic bacteria are present in wounds immediately after their infliction Spooner examined material (pieces of external wounds, wound tracks and foreign bodies from thirty-one early air raid wounds) at the first surgical cleansing. Pyogenic cocci were less frequent and coagulase-negative staphylococci, aerobic spore-bearing bacilli and *Clostridium welchii* were more common in recent than in older wounds. No bacteria were found in six wounds. Other bacteria found were *Escherichia coli* in six, diphtheroid bacilli in three, nonhemolytic streptococci in three, *Streptococcus viridans* in two, micrococci in six and other clostridia in one.

Guy's Hospital Reports, London

90:73-298 (Nos. 2, 3 and 4) 1940-1941. Partial Index

- Astley Cooper and Arterial Surgery. R. C. Brock.—p. 104.
 *Cirroid Aneurysm. R. Davies-Colley.—p. 134.
 *Cirroid Aneurysm of Chest Wall. N. L. Eckhoff.—p. 141.
 Angiomatous Malformations of Brain. D. W. C. Northfield.—p. 149.
 Traction Rupture of Great Vessels of Chest Following Injury to Head. K. Simpson and A. Cooper.—p. 196.
 Experiences in Pulmonary Artery Ligation. R. C. Brock.—p. 217.
 Popliteal Aneurysm: Report of Bilateral Case Treated by Bilateral Excision. A. G. Hardy and H. E. H. Denham.—p. 244.

Cirroid Aneurysm.—Davies-Colley reports the 6 instances of cirroid aneurysm (only 3 were of the head) that he encountered in the last twenty years. In discussing their probable pathogenesis he states that all cirroid aneurysms are the result of a developmental defect in the formation of the capillary barrier between arteries and veins. Most of them follow an intermediate stage of visible dilatation of the capillaries, the cavernous angioma. Trauma may play the part of an accessory factor in their formation but is never the only cause.

Cirroid Aneurysm of Chest Wall.—The large cirroid aneurysm of the wall of the chest that Eckhoff discusses had feeding vessels around the periphery, and one enormous vessel (not discovered until the third operation) entered from behind through an intercostal space. Whereas surgical measures were finally successful in causing the pulsation to cease, a capillary angioma appeared and spread well beyond the original confines of the aneurysm. Irradiation caused the angioma to regress. After this an ulcerated area appeared which was resistant to all ordinary methods of treatment, including cutaneous grafting, for a long time. This patient had a dense mass of scar tissue between the wall of the chest and the surface of the skin. The two treatments with radium added to the scar tissue. Healing followed excision of the whole ulcerated area, the removal of all scar tissue and the covering of the area with a large razor graft.

Journal of Hygiene, London

41:101-224 (Sept.) 1941. Partial Index

- Intratracheal Inoculation of Anthracis Dust Mixed with Dead Human Tubercle Bacilli into Rabbits. S. L. Cummins.—p. 101.
 Bacterium Dysenteriae Sonne: Study of Forty Strains, with Particular Reference to Appearance of Colonies. A. J. Rhodes and Christine Reid.—p. 105.
 Effect of Humidity of Air on Disinfection Capacity of Mechanically Atomized and Heat Volatilized Germicidal Aerosols. A. H. Baker and C. C. Twort.—p. 117.
 Tests of Significance of Differences in Degree of Pollution by Coliform Bacteria and on Estimation of Such Differences. H. J. Buchanan-Wallaston.—p. 139.
 Physical Type in Pneumoconiosis. E. A. Aslett, P. D. Hart, W. J. Martin and W. T. Russell.—p. 169.

Lancet, London

2:387-414 (Oct. 4) 1941

- *Influenza in England in 1940-1941. C. H. Andrewes, R. E. Glover, N. P. Hudson, Dora Lush and C. H. Stuart-Harris.—p. 387.
 Extraoral Splinting of Edentulous Mandible. L. Pohl.—p. 389.
 External Pin Fixation for Fractures of Mandible. R. Mowlem, A. B. MacGregor, J. L. D. Buxton and J. N. Barron.—p. 391.
 Blood Changes Following Controlled Hemorrhage in Man. J. Wallace and E. P. Sharpey-Schafer, with technical assistance of A. C. Pincock.—p. 393.
 Trichiniasis in South East London. E. Davis and E. N. Alcott.—p. 396.
 Trichiniasis with Cerebral Symptoms: Report of Two Cases. J. C. Houston and L. Ross.—p. 397.

Influenza in England.—According to Andrewes and his associates, the outbreak of respiratory disease prevalent in southern England in the spring of 1940 was of the long drawn out rather than of the sharply peaking form, "clinically typical" influenza was relatively infrequent and tracheobronchitis with slow recovery was prevalent. Garglings from patients with a diagnosis of clinical influenza were tested by the intranasal inoculation of ferrets, but no evidence was obtained that that virus was prevalent. None of the garglings produced infection in the ferrets. Although there was no general epidemic of influenza in the winter of 1940-1941, clinical influenza occurred sporadically in London and elsewhere in southern England. Eight of 19 garglings or samples of serum received in January and February from as many patients provided evidence that the disease was influenza A. During the same period a detailed clinical study of the acute respiratory infections occurring in a military hospital in southern England was being made, and although no actual epidemic was observed there was a sharply increased incidence of influenza in January and February. The influenza of many of the patients was similar to that seen in 1937 and 1939. Pathologic investigations revealed that 79 per cent of the local material studied was of virus A influenza. Not one of the specimens from 16 patients from various districts examined during March and April 1941 gave evidence that influenza A was concerned. The 1940-1941 studies have shown that testing serums for neutralizing antibodies is a far more delicate index of infection than the inoculation of ferrets. The amniotic method of chick inoculation has given even poorer results than the inoculation of ferrets.

Quarterly Journal of Medicine, Oxford

10:139-282 (July) 1941

- Bronchial Adenoma. A. F. Foster-Carter.—p. 139.
 Refractory Anemia: I. Clinical and Pathologic Aspects. R. R. Bomford and C. P. Rhoads.—p. 175.
 *Id.: II. Etiology and Treatment. R. R. Bomford and C. P. Rhoads.—p. 235.

Etiology of Refractory Anemia.—Bomford and Rhoads examined the records of 66 patients with refractory anemia in an attempt to evaluate the important etiologic factors. Race, sex, age and family history appeared to have no influence. A possible influence of eunuchism, menstruation and the menopause was noticed in a few instances. The incidence of achlorhydria was below normal. Half the patients were known to have been exposed to aromatic hydrocarbons and 1 to roentgen and radium therapy. Exposure to sunlight, ultraviolet and roentgen irradiation seemed to make the condition of a few patients worse. An increasing macrocytosis usually indicated a spontaneous remission. The results of tests of hepatic function suggested that hepatic impairment may be an important factor in the causation of refractory anemia. The simultaneous excretion of coproporphyrins I and III indicated that the disturbance of pigment metabolism in refractory anemia is similar to that observed in hepatic diseases and certain forms of exogenous poisoning but unlike that in pernicious anemia and hemolytic jaundice. The excretion of fecal urobilinogen was above normal levels in half the patients. The hemolytic substances normally present in the human urine were present in a bound or conjugated form in the urine of patients with refractory anemia. The erythrocytes of these patients were slightly more than normally resistant to lysis by saponin. A possible abnormality in the processes of detoxication was detected. The measure of greatest importance in the treatment of patients with refractory anemia appeared to be the prevention of their exposure to any potentially hemotoxic substances or influences. Blood transfusions and dietary supplements were usually indicated for all patients, and splenectomy, as a last resort, for a few.

Jahresb. d. Kurashiki-Zentralhosp., Kurashiki**15:95-346 (July) 1941. Partial Index**

*Studies on Japanese Type Epidemic Encephalitis: I. Histopathologic Study. Y. Kitagawa.—p. 95.

*Id.: II. Clinical Observation. Y. Kitagawa.—p. 145.

Japanese Type Encephalitis.—Kitagawa made histologic examination of the brain of 6 and the spinal cord of 5 patients who died of Japanese type epidemic encephalitis, with the following results: The predominating change in the brain in summer encephalitis is the increased accumulation of colloid cells, leading to the formation of colloid nodules and glia proliferation and resulting in the production of areas of softening. These nodules always arise at the point of entry of the virus in the parenchyma of the brain and bear definite relationship not only to the virulence of the virus but to individual constitution, as well as to the degree and extent of immunity. They appear to have special affinity for the midbrain, although they may be found throughout the central nervous system, particularly in the gray matter. These structures form primarily as a defensive process of the nervous system, but secondarily they may represent a means of disposing the necrotic material. The glial proliferation and entanglement may have the identical mechanism in their formation as the colloid nodules, and they may be regarded as a special form of Spielmeyer's pseudo-neuronophages and true neuronophages. Microglia may show progressive changes in all parts of the nervous system, but the changes become stationary when the disease process ceases, while the changes in the oligodendroglia are usually negligible. Proliferation of macroglia practically never occurs in the acute stage of the disease. True neuronophages and perivascular infiltration are also of general distribution, but no special significance can be attached to these elements. Thus the summer encephalitis virus shows varying degrees of affinity to the central nervous system, producing changes in the nature of the blood. Primarily it stimulates the microglia, causing accumulation of colloid material at the point of entry and resulting in the formation of colloid nodules and glial proliferation; when it enters deeper into the parenchyma of the brain it causes changes and necrosis of the tissue. Although histologically summer encephalitis resembles von Economo's lethargic encephalitis, the author expresses the view that distinctive characteristics differentiate the nature and the distribution of the changes produced by these two diseases.

Clinical Observations of Japanese Encephalitis.—Kitagawa further reports his observations on the clinical manifestations of Japanese encephalitis in 26 typical patients, of whom 9 were male and 17 female, ranging in age from 10 to 56 years. The season of the year in which the disease most frequently occurred was the summer (July to September). The onset was acute, with cloudiness of the sensorium appearing within one to eight days, usually after the onset of high fever. The author describes in detail various neurologic signs of the disease, but special emphasis is placed on the state of the cerebrospinal fluid. In 26 cases a total of eighty-six examinations were made of the fluid obtained by lumbar puncture. The pressure varied from 45 to 300 mm., with an average of 196 mm. The reaction was always alkaline and the fluid, with only one exception in which slight turbidity was noted on one occasion, water clear. The globulin tests practically all gave positive results, but no tendency for pellicle formation was noted in any sample. The protein content of the eighty samples examined varied from 0.033 to 0.15 per cent, with an average of 0.075 per cent. The Heine sugar reaction was for the most part normal. The cell count in seventy-six samples revealed an average of 173 cells per cubic millimeter, the number decreasing with the progress of the disease. In 2 instances gram-positive diplococci were cultured. The hospital stay ranged from four to one hundred and seven days, the average being twenty-three days; the average duration of the disease with complete recovery was forty-five days. Relapse occurred in 4 cases, and the residual complications were elevation of temperature, disturbance of sleep, headache, nausea and vomiting and hypersecretion of saliva. Complications were as a rule rare, but empyema, peri-

carditis, pulmonary gangrene, pneumonia and bed sores occasionally followed the disease. The more serious after-effects were paralysis of the limbs, paralysis of the nerve and difficulty in deglutition. As a result of these observations the author concludes that the Japanese type of encephalitis is an entity distinct from the lethargic type, and that it is capable of terminating in parkinsonism.

Taiwan Igakkai Zassi, Taihoku, Formosa**40:1181-1348 (July) 1941. Partial Index**

*Experiences with Chemotherapy in Gonorrheal and Nongonorrheal Urogenital Diseases. T. Yoh.—p. 1307.

Chemotherapy in Urologic Diseases.—Yoh employed sulfanilamide and its derivatives in a number of cases of urologic disease, including 140 of gonorrheal and 56 of nonspecific infections. Administration of massive doses of sulfanilamide in addition to the usual method of treatment definitely accelerated the cure of gonorrheal infection, but some of the complications resulting from gonorrhea failed to respond satisfactorily to this mode of treatment. If the patients with gonorrhea were first treated by the injection of either vaccine or autogenous blood, the subsequent employment of chemotherapy appeared to be more efficacious than it was when no preliminary treatment was instituted. The same beneficial effect was observed when treatment with sulfanilamide and its derivatives was preceded by fever therapy. It was difficult to differentiate the effect of the various sulfanilamide derivatives, but sulfapyridine appeared to be effective when other preparations failed to produce satisfactory results. Of the 32 patients who came to the attention of the author after a course of self medication with sulfanilamide or its derivatives only 1 was found to be cured; all the others still suffered from active disease. The drugs were also found to be effective in genitourinary diseases due to staphylococci and streptococci infections, but diseases due to the colon bacillus and the tubercle bacillus were resistant to chemotherapy. Sulfapyridine produced the greatest number of undesirable symptoms, but cessation of medication usually resulted in prompt disappearance of complicating manifestations. One instance of death due to granulocytopenia following massive doses of a sulfanilamide derivative is recorded.

Acta Medica Scandinavica, Stockholm**108:363-482 (Aug. 26) 1941. Partial Index**

Multiple Myeloma with Leukemic Blood Picture and Degenerative Changes in Spinal Cord. G. A. Lindeboom and H. J. Mulder.—p. 363.

*Results of Specific Therapy of Leprosy in Estonia During Last Twenty Years. A. Paldrok.—p. 374.

Etiology of and Supposed Relations Between Lymphogranulomatosis Maligna and Mycosis Fungoides. O. Lövgren and C. Westman.—p. 387.

Clinical Studies on Chronic Articular Rheumatism. G. Edström.—p. 398.

*Some Cases of Macrocytic Hyperchromic Anemia Without Gastric Achylia, Their Etiology and Relation to Cryptogenic Pernicious Anemia and to a New Antianemic Factor. O. P. Nielsen.—p. 421.

Case of Hemochromatosis (Diabète Bronzé) Combined with Multiple Joint Anomalies. H. J. N. Dekkers.—p. 440.

Pellagra and Mental Diseases. H. Löfvendahl.—p. 455.

New Stomach-Liver Preparation for the Treatment of Pernicious Anemia. M. Odin.—p. 466.

Specific Therapy of Leprosy in Estonia.—Paldrok observed that the causal organism of leprosy consists of granules that are surrounded by an envelop; five or more are generally in one sheath. The common envelop creates the appearance of a rod which Amauer Hansen had designated as the bacillus of leprosy. Paldrok observed, however, that the multiplication of these rods is not like that of bacilli but that the granules adhere to the wall, then penetrate the envelop and develop into dendritic forms as do fungi. He became convinced that the causal organism of leprosy is not a bacillus but rather a fungus and that this explains why the leprosy organism does not grow in cultures suitable for bacilli. He found also that the granules and the covering differ in their chemical composition. Whereas the granules contain free nucleic acid, the envelop contains nucleoproteins. Searching for a substance that would destroy the covering so that the granules could be

reached, he decided to utilize the action of cold in the form of solid carbon dioxide. Rods of solid carbon dioxide are pressed against the leproma for three to four seconds. Lepromas of millet seed size completely disappear about three weeks after the freezing, but with larger ones the freezing must be repeated. At each session fifteen to twenty lepromas are frozen, and the procedure is repeated every two weeks. After four months, the treatment is interrupted for the same length of time. The decomposition products released during freezing are absorbed by the organism and cause the formation of antibodies. There are indications that the solid carbon dioxide treatment is an autoimmunization. The favorable effect of solid carbon dioxide on leprosy has been corroborated by investigators of many different countries. If after two years of treatment with solid carbon dioxide the organism has lost its responsiveness to the substance a new chemotherapeutic stimulus must be employed, and the author found the organic gold preparation solganal effective. In the course of treatment with solganal the organism regains its responsiveness to solid carbon dioxide, so that the two treatments can be used alternately. Good food, a hygienic mode of life, adequate exercise and weekly sweat baths are complementary measures. Those who are apparently cured are kept in the leprosarium for an additional two years. For the first five years after discharge the patients must submit to control examinations every six months. After pointing out that nonspecific shock therapy has largely failed in leprosy, the author says that the efficacy of the solid carbon dioxide and gold (solganal) treatment is proved by the fact that, whereas in 1920 the total number of patients with leprosy in Estonia was 316, by 1940 there were only 113.

Macrocytic Hyperchromic Anemia Without Gastric Achylia.—According to Nielsen it is now generally agreed that gestational pernicious anemia differs from cryptogenic pernicious anemia. Patients with the former often have free hydrochloric acid, have no organic nervous symptoms, seldom show an increased icterus index and do not require continuous liver therapy. In this report a brief survey is given of previous views concerning pernicious anemia with the gastric secretion of hydrochloric acid preserved and the pernicious anemia of pregnancy, with special reference to the cause and the relation to cryptogenic pernicious anemia. Histories are given of 2 cases of pernicious anemia of pregnancy and 2 cases of pernicious anemia with the gastric secretion of hydrochloric acid preserved. Therapeutically the diseases differ from cryptogenic pernicious anemia by their failure to respond to the injection of liver and stomach preparations. On the other hand, they respond favorably to oral administration of liver extract. The author advances the hypothesis that the cause is the same in the reported cases of pernicious anemia of pregnancy and pernicious anemia with preserved hydrochloric acid secretion, namely that the anemia is due to lack of a new antianemic factor. The diseases are taken to be essentially different from cryptogenic pernicious anemia but closely related to Israels and Wilkinson's achrestic anemia, and to tropical macrocytic anemia.

Acta Radiologica, Stockholm

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Primary Cancer in Uterus and in Rectum of the Same Patient: Study of Twelve Case Histories. E. Nordlander.—p. 439.
Mycographic Changes in Kyphosis Dorsalis Juvenilis. E. Lindgren.—p. 461.

Primary Partial Invagination of Appendix Diagnosed by Roentgenologic Examination: Case. H.-G. Skarby.—p. 471.

*Significance of Large Niches in Stomach. H. Myhre.—p. 482.
Simple Method of Localizing Foreign Bodies. N. Westermark.—p. 490.
Terminal Ileitis. S. A. Chrom.—p. 493.

*Epituberculosis and Lung Atelectasis. N. Westermark.—p. 501.
Os Naviculare Bipartitum. E. Lindgren.—p. 511.

Darkrooms and Their Equipment in Roentgen Departments. N. Westermark.—p. 515.

*Results of Roentgen Treatment of Spondylitis Rhizomelica (Spondylarthritis Ankylopoietica). J. van Ebbenhorst Tengbergen and H. J. N. Dekkers.—p. 522.

Large Niches in Stomach.—According to Myhre a giant niche of the stomach always provokes a strong suspicion of cancer, because it is often stated that niches measuring more than 2.5 cm. in diameter are nearly always malignant. To

throw more light on this problem, the author investigated 23 cases in which large niches had been photographed and in which operation was done. He included in this study all niches with an aperture of more than 2.5 cm., provided infiltration of the wall of the stomach outside the swollen edge of the niche did not clearly prove it to be a cancer. It was found that nine of the twenty-three craters were cancers, while the other fourteen were benign ulcers. Of the fourteen benign niches one measured 2.5 cm. in the roentgenogram, another 6.5 cm. and the others between 3 and 4.5 cm. Of the nine malignant ones one measured 2.5 cm. and the others between 3 and 4.5 cm. The surgically removed specimens usually had a smaller diameter than did the niche on the roentgenogram. Owing to divergence of rays, roentgenograms produce a magnification of 10 to 15 per cent. The author concludes that if no definite sign of cancer can be seen in the roentgenogram the large niches with an aperture of 3 cm. and more can be taken to represent benign ulcers at least as often as malignant ones, perhaps even more often. However, some really are malignant and the differential diagnosis may be impossible, because a roentgenologic improvement during dietetic treatment may prove misleading.

Epituberculosis and Pulmonary Atelectasis.—Westermark says that in 1920 Eliasberg and Neuland described a pathologic condition in tuberculous children which they designated epituberculosis. It is characterized by massive pulmonary consolidations. The roentgenologic aspects are similar to those of tuberculous pneumonia. Three different explanations have been given for the epituberculous opacity: 1. Tuberculous parenchymatous infiltrations are the cause of the opacity. 2. It is wholly or partly caused by obstructive atelectasis. 3. The opacity is caused by a focal reaction as a result of excessive sensitiveness. Reviewing the literature, the author found 44 cases of so-called epituberculosis and observed that among them two different types of changes could be differentiated. A group of 7 cases presents the aspects of a more or less extensive obstructive atelectasis, which is caused by enlarged hilar glands which infiltrate and compress the bronchus leading to the dense region. The opaque lobe occupies a smaller volume than it would normally. There is retraction of the thoracic wall over the opaque lobe and displacement of the heart and the mediastinum to the diseased side. The author describes a case of his own observation and reviews some cases from the literature. In the other condition, the opaque lobe is of normal or larger than normal volume; there is no retraction of the thoracic wall and no displacement of the heart and the mediastinum to the diseased side, but occasionally there is displacement to the healthy side. This process seems to tally with the true form of epituberculosis according to Eliasberg and Neuland. It is caused by a proliferative tuberculosis.

Roentgen Treatment of Rheumatoid Arthritis of Spine.—According to van Ebbenhorst Tengbergen and Dekkers roentgen treatment has been employed in rheumatoid arthritis of the spine (rhizomelic) for the last ten or twelve years. Since most investigators who tried this form of treatment obtained favorable results, particularly with regard to a reduction in pain, the authors likewise resorted to it. In the 27 patients on whom they employed roentgen treatment the diagnosis was well established. The majority had had their complaint for a long time, because the diagnosis is often made rather late. Before roentgen treatment was begun some form of physical therapy had been used on all patients. Some had received injections of the Warren-Crowe vaccine, mostly without much beneficial effect. The authors outline the technical details of the roentgen therapy. The best effects were obtained in the patients in whom the symptoms had existed for only a comparatively short time (less than one year). Summarizing the results of therapy the authors state that 16 patients showed considerable and 2 moderate subjective improvement; 15 were able to continue their daily work. The function of the spinal column was improved in only 4 of the patients. The sedimentation rate decreased in 18 cases. If the sedimentation speed is regarded as an index of the activity of the process, it may be said that in 18 cases the activity was subdued. The authors think that on the whole the results may be designated as favorable.

Book Notices

The Modern Treatment of Syphilis. By Joseph Earle Moore, M.D., Associate Professor of Medicine, The Johns Hopkins University, Baltimore. With the collaboration of Jarold E. Kemp, M.D., Associate in Venereal Diseases, The Johns Hopkins University, et al. Second edition. Cloth. Price, \$7. Pp. 674, with 98 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

There are many changes in this edition. As the preface states, twenty-three of the thirty-two chapters of the first edition have been completely rewritten. Moreover, the material on infectiousness in syphilis has been greatly amplified, particularly in its relation to treatment. There is a new chapter on public health aspects of syphilis and a much needed chapter devoted to the subject of intensive arsenotherapy. The chapter on interpretation of serologic tests in the diagnosis and treatment of syphilis has been completely rewritten by Dr. Harry Eagle and adds much to the value of the book. Dr. Paul Padgett has revised the chapter on cardiovascular syphilis and Dr. Mary Goodwin has completely revised the chapters on the treatment of the syphilitic pregnant woman and on the antepartum prevention of congenital syphilis, as well as on the treatment of congenital syphilis. As Dr. Moore well puts it, Dr. Jarold Kemp, only recently deceased, a clinician, immunologist and syphilologist of the highest ability, assisted greatly in the complete revision of the entire manuscript.

The reviewer has noted only a few minor items to which exception might be taken. On page 136 the advice is given that biliposol, a liposoluble compound, be given two or three times a week. It is true that on page 141 its use is more properly advised every five to seven days. Again, thiobismol is recommended as an antisyphilitic injection twice weekly. It should be administered more properly three times a week, and because of its rapid excretion there is a question whether this drug should ever be used as an antisyphilitic agent. On page 190, last paragraph, the word "gland" is improperly employed for "lymph node." On the same page the use of B. hemophilus Ducrey vaccine for the treatment of chancroidal infection is not even mentioned, yet it is very useful for syphilitic patients getting arsenical therapy when one might hesitate to use sulfonamide derivatives internally.

Moore feels, page 247, that, for syphilitic patients undergoing treatment with bismuth and arsenic compounds examination of the urine once in two to three months is sufficient. The reviewer thinks that a more conservative period would be once a month. On pages 269 and 278, in late latent syphilis and in benign late syphilis, osseous and mucocutaneous, the advice is given to start therapy with an arsenical. Would it not be better to institute first a course of bismuth compounds? After all, modern methods of diagnosis are not entirely able to detect certain submerged syphilitic changes in the aorta and liver. The reviewer thinks that the first lumbar puncture should be done earlier in the course of the disease rather than at six months. There is difference of opinion, however (page 349). Otherwise, certain persons with early central nervous system involvement will not have their lesions detected.

On page 386, figure 72, the word "thiobismol" is misspelled and the addendum should be "from Cole, Schwartz et al."

But these are only minor items in what is an admirable presentation of the treatment of syphilis. The entire subject is so well handled that it is difficult to pick out exceptional chapters, though the portions on infectiousness, on central nervous system syphilis and on interpretation of serologic tests are particularly well handled. The book will be a "required" standard for every hospital, syphilis clinic and physician and student of syphilis. The authors are to be congratulated for their comprehensive treatment of such an important and almost endless branch of medicine.

The volume is replete with tables and charts to illustrate better the subjects under discussion. Moreover, the printer and the bookbinder have done their work well.

What a pity it is that Kemp is not here to enjoy the deserved encomiums due its authors.

El factor emocional en la etiopatogenia de la enfermedad de Basedow. El mecanismo causal analizado en 24 casos: Conclusiones, patogenicas, terapeuticas, pronosticas y profilacticas. Por el Dr. Leonardo C. Perrusi, adscripto a la Cátedra de clinica medica de la Facultad de ciencias, medicas de Buenos Aires. Paper. Pp. 180. Buenos Aires: "El Ateneo," 1939.

In this book the author has made careful and detailed psychoanalytic studies of a group of 24 selected cases of hyperthyroidism and in each instance he finds some psychic trauma responsible for the initiation of the disease. For example, each chapter contains the report of a case of hyperthyroidism, and the titles run as follows:

Chapter II. Basedow's Disease of Psychogenic Origin, Brought About by a Sudden Fear.

Chapter III. Basedow's Disease Aroused by an Inferiority Complex and by Exaggerated Ambitions and Libido.

Chapter IV. Psychogenic Basedow's Provoked by an Insolvable Family Situation.

Chapter V. Basedow's Provoked by Unmanageable Pruritus.

Chapter VI. Basedow's Originated by a Sentimental Drama.

Chapter VII. Basedow's Disease Brought About by Antivenereal Phobia.

Chapter VIII. Basedow's Disease Brought About by the Death of a Relative and a Situation of Desperation.

Chapter IX. Basedow's Brought About by the Prolonged Sickness of the Husband.

After analyzing these and 15 other cases, the author concludes that in almost all cases of hyperthyroidism the disease is produced by emotional factors which excite the gland to hyperactivity via the sympathetic nervous system.

The author feels critical of those physicians who make a diagnosis of hyperthyroidism of unknown origin and states that this diagnosis is incorrect, as the majority of the cases that the author has seen could be classified as dysthyroidism occurring in predisposed persons as a result of emotional disturbances.

The author admits that the factors influencing the predisposition of a patient to acquire hyperthyroidism are poorly understood. Among predisposing factors he lists the degree of civilization, the activity of the patient's life, the geographic position of the country, emotional disturbances, inferiority complexes, conception during a difficult period in the parent's life, and inharmonious function of the endocrine glands.

The author emphasizes that, in addition to the usual treatment of hyperthyroidism by rest, iodine, roentgen rays or surgery, all patients with hyperthyroidism should be subjected to psychoanalytic studies to determine and eradicate the emotional factors responsible for the development of the disease.

There are few who would agree with the author's conclusions as to the etiology of hyperthyroidism. The trend of thought is away from the conception that it is the result of worry, anxiety, fear or any other emotional disturbance. Few would deny that emotional disturbances result in an exacerbation of the symptoms of a patient already suffering from hyperthyroidism, but even fewer would subscribe to the hypothesis that the disease is caused by emotional disturbances. Dr. Perrusi fails to present any new evidence to support the concept of an emotional etiology of hyperthyroidism, nor does he present any logical reasoning in support of such a theory.

His cases, although obviously carefully studied from the psychoanalytic point of view, are not always convincing, and the emotional factors which the author assumes initiated the hyperthyroidism are often far fetched. It would be hard indeed to find any series of 24 cases of any disease in which, if one looked deeply enough into the emotional background of the patient, one could not find emotional factors as significant as those reported in the author's cases.

The book is interesting and carefully worked out from the psychoanalytic standpoint but unconvincing.

Hypoparathyroidism in Denmark: A Clinical Study. By Aage Lachmann. Translated from Danish by Hans Andersen, M.D. Acta medica Scandinavica Supplementum CXXI. Paper. Pp. 269, with 14 illustrations. Copenhagen: Einar Munksgaard, 1941.

Acta medica Scandinavica contains articles pertaining to internal medicine. These articles are published in English, French or German as the authors prefer. The present volume, a clinical study of hypoparathyroidism in Denmark, is printed in English with a summary in Danish and represents work which was begun in 1934. The material has been divided into an introduction, discourses on postoperative hypoparathyroidism, idiopathic hypoparathyroidism, a summary and case records. A

bibliography of three hundred and forty-eight references is included and should be of inestimable value to those interested in the clinical study of hypoparathyroidism. The format is conducive to easy reading, and the descriptions follow in well ordered sequence.

Of special interest is the author's review of the individual symptoms in postoperative hypoparathyroidism. He has divided them into three groups: (1) changes in calcium and phosphorus metabolism, (2) symptoms from the nervous system and (3) trophic changes in the ectodermal tissues. In the study of agents capable of raising the serum calcium level, particular attention is paid to calcium preparations, vitamin D preparations, acidifying remedies, parathyroid hormones, parathyroid transplantations and combinations of the foregoing. Dihydroxycholesterol gave the most promising results. For those who are interested in the problem of hypoparathyroidism, this treatise can with little reservation be recommended for correlative reading.

Orbital Tumors: Results Following the Transcranial Operative Attack. By Walter E. Dandy. Cloth. Price, \$5. Pp. 168, with 100 illustrations. New York: Oskar Pfest, 1941.

This is an interesting and instructive presentation of 31 cases of tumors involving the orbit. The 24 cases in which the orbital portion of the tumor was attacked surgically by the transcranial approach again give ample testimony to the surgical skill of the author. In addition to the detailed presentation of the cases there is a discussion of the pathologic nature of the tumors encountered and of the operative procedure. With such wide variations in the microscopic appearance of the lesions described here as Christian-Schüller's disease, one shares the author's reservations regarding the diagnosis of these cases. It is not a little surprising to find the common meningioma referred to here as a "dural endothelioma," a "dural tumor" or a "dural meningioma" when practically every modern pathologist with any considerable experience with these tumors has come to recognize their origin from the leptomeninges. It is rather surprising that two procedures, insertion of a flanged needle into the lateral ventricle for continuous drainage throughout the operation (in addition to opening of the chiasmatic cistern) and the use of motor driven burrs for the removal of markedly thickened bone, which other surgeons have found of great value, have apparently found no place among the surgical procedures of this author. The illustrations, particularly the drawings illustrative of the operative procedures, are excellent and add much to the value of this monograph. Ophthalmologists and neurosurgeons alike will wish to add this book to their libraries.

A insuficiência coronária (estudo semiológico). Por Calo Benjamin Dias, assistente de Clínica propedéutica médica da Faculdade de medicina da U. M. G. Paper. Pp. 162, with 51 illustrations. Belo Horizonte: Livraria Editora Paulo Blum, 1941.

It is gratifying to have so lucid a review of coronary insufficiency printed in Portuguese. The author has thoroughly reviewed the literature, and a perusal of the monograph shows that he is cognizant of the recent developments in this field. The bibliography of one hundred and sixty-three references covers the American, South American and European literature adequately. The subject is divided into five sections. The first deals with the anatomy and physiology of the coronary vessels, the second with the general concept of coronary insufficiency, the third with its causes and the mechanisms responsible for it, the fourth with the clinical manifestations and the last with the electrocardiographic appearance. The author includes a series of his own cases in the last section. There is little that the physicians of this country can obtain from this monograph not present in excellent reviews on this subject in the English literature.

Alimentación y nutrición en Colombia. Por el Dr. Jorge Bejarano, profesor de higiene de la Facultad de medicina de Bogotá. Paper. Pp. 170. Bogotá: Editorial Cromos, 1941.

This is a good book written by a man who is professor of hygiene at the University of Bogota and president of the Red Cross of Colombia. Dr. Bejarano is concerned over the lack of good judgment in the choice of foods which he finds among so many of the people of Colombia. They take too much sugar and starchy food and do not get enough protein and fat. They take little milk and eggs, and they do not get enough fruit and vegetables. Many persons imbibe altogether too much of the

locally made alcoholic drinks, and they fail to get enough calories in the diet. In most places the water supplies are poorly guarded from contamination with fecal material. Dr. Bejarano has written a book which will give Spanish speaking physicians and intelligent laymen a good idea of the recent advances in the science of alimentation and nutrition. He hopes that more of this knowledge can be put to use in his country.

Analgesia obstétrica: El sueño crepuscular barbitúrico en el parto. Con estudio especial del pentobarbital sódico. Por Juan Leon, profesor adjunto de Clínica obstétrica de la Facultad de ciencias médicas de Buenos Aires. Paper. Pp. 574, with 169 illustrations. Buenos Aires: El Ateneo, 1941.

The author reviews the observations made in a series of 201 patients seen in the obstetric and gynecologic clinic Elísio Cantón of the Medical School of Buenos Aires. In this series pentobarbital sodium was used alone in 80 cases, pentobarbital sodium and paraldehyde were used in 40 cases and pentobarbital sodium and chloral hydrate were used in 50 cases. Leon discusses the effects of these drugs from the standpoint of relief of pain, their effect in shortening or increasing the length of labor, their freedom from aggravation of infections and their effect on the child as far as respiration is concerned. He states that, in relief of pain, success was obtained in 39.6 per cent of cases, that relative failure was obtained in 49 per cent and that failure resulted in 9.5 per cent of cases. No untoward effect was observed with regard to the mother or the infant or in the progress of labor in 76.1 per cent of cases, whereas in 23.9 per cent complications arose. The author believes that, on an average, complete success was obtained in 30.5 per cent of cases. He believes that the drugs which he describes should be used in the first stage of labor but that during the actual birth of the child gas anesthesia or regional anesthesia should be used and that the physician should not use one method of anesthesia as a matter of routine.

Die Nervenkrankheiten des Rindes: Eine Grundlage für eine vergleichende Neurologie von Mensch und Haustier. Von Dr. med. E. Frauchiger und Dr. med. vet. W. Hofmann, ord. Prof. für Rinderheilkunde an der Universität Bern. Cloth. Price, 24 Swiss francs. Pp. 361, with 139 illustrations. Berne: Hans Huber, 1941.

This book on the nervous diseases of cattle and live stock is a real contribution. It is a groundwork for a comparative neurologic study of man and animal. The majority of the illustrations are in relation to cattle. There are two parts to this excellent book. The first part consists of a short abstract of the nervous diseases of the animals together with the clinical anatomy and methods of study. The second portion consists of the diseases of the brain, circumscribed disorders of the brain, diseases of the spinal cord, lesions of the cortices of the central nervous system, peripheral nerve diseases, disturbances of the vegetative nervous system, disorders of the muscles and, lastly, diseases of the nervous system without organic disease (neuroses). There is a good bibliography after each chapter in the two portions of the book. The German is easily read and the statements are clearly written. This book is a most unusual one and is highly recommended to all neuropathologists, neurologists and veterinarians.

Synopsis of Applied Pathological Chemistry. By Jerome E. Andes, M.S., Ph.D., M.D., Director of Department of Health and Medical Advisor, University of Arizona, Tucson, and A. G. Eaton, B.S., M.A., Ph.D., Assistant Professor of Physiology, Louisiana State University School of Medicine, New Orleans. Fabrikoid. Price, \$4. Pp. 423, with 23 illustrations. St. Louis: C. V. Mosby Company, 1941.

In this handy, pocket sized volume are gathered practically all of the well established chemical methods applicable to the study of blood, cerebrospinal fluid and urine. In addition, chapters are devoted to renal, liver and endocrine functional tests and to gastric analysis and basal metabolism. The physiologic and pathologic changes in concentration of the various substances considered are discussed and well charted in relation to clinical findings. Concise statements of procedure, supplemented by references to adequate but less well known methods, render the book of practical value to the intern and the busy physician. The book is not without some minor inaccuracies of statement, and it can hardly be classified as a reference work. In the main, however, it admirably fulfils the authors' purpose by providing a "practical, simple, easily read text on the application of pathologic chemistry to clinical medicine."

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

P WAVE AND CORONARY DISEASE

To the Editor—A man aged 51 had an electrocardiogram made during the course of a general examination, on Dec. 30, 1940. At that time he gave no history or symptoms of heart disease, but the report of the cardiologist was as follows: "Electrocardiogram essentially normal. The negative P waves in leads 2 and 3 are not believed to be of clinical significance." About the middle of July 1941 the man began to complain of such symptoms as dyspnea on exertion and substernal pain on climbing stairs. About the first of August he became ill with an acute bronchitis, and since that time he has noted heart consciousness, dyspnea on exertion and chronic nonproductive cough especially after retiring at night. He has not had typical anginal pain radiating from the arms or up into the neck. An electrocardiogram report on Sept. 26, 1941 states that "P wave changes, including widening, suggest auricular disease—may be functional." The cardiologist further states that "In view of the history and evidence of peripheral arteriosclerosis as shown by moderate thickening of the peripheral arteries and as suggested by electrocardiographic findings, coronary arteriosclerosis is considered to be present. No evidence of cerebral arteriosclerosis (eyegrounds essentially normal)." Another electrocardiogram was made on Oct. 23, 1941 by a different physician, and while the cardiogram appears the same as the one made in September, he states that it is "not definitely abnormal." It is asked that significance of inverted or negative P waves in leads 2 and 3 be explained. Could symptoms as mentioned coming on after the patient had left a quiet occupation for one requiring rather strenuous exertion be a causative factor in producing a coronary sclerosis? In other words, would the cardiogram taken in conjunction with subjective symptoms and with negative findings on physical examination of the heart be indicative of beginning coronary disease? M D, Arkansas

ANSWER—Inversion of P in lead 3 occurs normally, but P inversion in lead 2 is abnormal. The best known changes in the P wave are the broad, tall, notched and upright P waves in leads 1 and 2 which occur in mitral stenosis, and the tall upright P waves in leads 2 and 3 in chronic cor pulmonale. Inversion of P₂ and P₃ usually indicate a change in the direction of spread of the impulse in the auricles. The most common cause is retrograde stimulation of the auricles by a pacemaker located in the auriculoventricular node. This is accompanied by a shortened PR interval (less than 0.12 second). If the PR is not shortened, it is presumed that a sinus rhythm is associated with intra-auricular conduction disturbance. The significance of an inverted P₂ and P₃ depends on the condition giving rise to activity of the subsidiary nodal pacemaker when this is the mechanism of its production or to the cause of the intra-auricular conduction disturbance when the pacemaker is still in the sinus node. Transient P wave inversion is less significant than permanent P wave inversion.

Coronary disease is one of the common causes for P wave inversion in leads 2 and 3, although infectious diseases or excessive digitalis may be responsible in part. Other evidences of abnormalities in the electrocardiogram will help evaluate the meaning of P wave inversion. In short, inversion of P₂ and P₃ is abnormal, but its true meaning must depend on an analysis of the contour of the P wave and its duration, the PR duration, the contour of the ventricular complex and the rate of the heart.

When none of these other factors are altered, too much attention should not be attached to such P wave inversions.

As regards exertion as a causative factor in producing coronary sclerosis, there is no evidence to favor this view other than a philosophical belief that "burning the candle at both ends" leads to more rapid aging of the coronary arteries. It seems more likely in this case to assume that with a more strenuous life the signs of coronary insufficiency become more manifest. The presence of the symptoms in this case are far more significant than the P wave abnormalities, and only by a proper evaluation at the bedside of the circumstances which might give rise to these symptoms can the final judgment be made as to whether or not clinically significant coronary disease is present.

NIH SWABS FOR PINWORMS

To the Editor—Can you give me some information on the NIH cellophane swab frequently mentioned in connection with pinworms? M D., Illinois

ANSWER—The NIH cellophane swab was named by the late Dr Maurice C. Hall, former chief of the Division of Zoology of the National Institute of Health; hence the initials NIH. Hall had found that only approximately 5 per cent of all the

cases of oxyuriasis can be diagnosed from fecal examination. He found from the literature that various types of swabbings and scrapings made from the perianal area provided a much better method of diagnosis. He perfected a simple swab consisting of a glass rod about $\frac{3}{16}$ inch in diameter and 4 inches in length and with a small square or circle of cellophane attached to one end with a small rubber band. The swabbing is made preferably in the morning on the suspected patient before the patient has had his morning stool and before he takes a bath. The skin of the perianal and perineal region is swabbed with the cellophane, and if this is at a home call on the patient it is then placed in a stoppered test tube and taken to the office or clinical laboratory. The cellophane is then removed with a pair of curved forceps, flattened out on a slide in a few drops of distilled water and mounted with a coverglass. Eggs of the seatworm, which will have readily adhered to the cellophane, are therefore easily recognized in the transparent preparation. In order to be absolutely sure that the patient does or does not have oxyuriasis, it is necessary to make a series up to six swabbings, unless, of course, the eggs are previously found. Furthermore, since oxyuriasis is more or less familial, if two or more members of the family are diagnosed as infected it is usually advisable to treat the whole family, including the father.

STRABISMUS IN YOUNG CHILD

To the Editor—Nine weeks ago a boy aged 2 years fell from the steps and struck his head on concrete, landing on the superior lateral portion of the left orbit. He did not become unconscious, and the injury seemed so trivial that a physician was not called. Three weeks later the child went to bed apparently perfectly normal and awakened in the morning with a decided internal squint of the left eye, which to date has shown no signs of improvement. I was consulted on the day the squint occurred. I delivered this child, and the delivery was perfectly normal. The boy's head was roentgenographed, and there were no signs of fracture, although the physician who made the roentgenogram stated that roentgenograms taken at this age frequently are unsatisfactory. I referred the parents to an eye specialist, who believes the condition to be paralysis of the abductens due to the injury, possibly resulting from the formation of a small hematoma, and also states that he feels sure it is not a Gradenigo syndrome. I referred them also to a local neurologist, who states that he believes it to be not the result of an injury but paralysis of the abductens, cause unknown, a condition which occurs in children between the ages of about 2 to 4 years but which may but does not always clear up around the age of 14. I would appreciate information on similar case records of spontaneous or traumatic paralysis of the abductens. Assuming that this is paralysis of the abductens without remission, is there any operation on the eye muscles which will relieve the condition, and if so at what age should this be done so that the sight of the eye will not be impaired? Do you have any other studies to suggest or any treatment? M D., Pennsylvania.

ANSWER—It is impossible to tell in the absence of details of the examination whether the condition is a paralysis or a concomitant strabismus. The injury is an unlikely cause owing to the long interval between it and the onset of the squint (three weeks, in a very young child). It is a common history that strabismus in a child begins abruptly, the early stages being overlooked by the family. Paralysis of the abductens dating from birth is not uncommon. It is decidedly uncommon coming on spontaneously at the age of 2 years. Convergent strabismus coming on at this age is exceedingly common. Paralysis produces diplopia, which might cause the child to hold his head in a position to avoid diplopia (turned toward the right). In paralysis, if the patient is made to fixate first with the normal eye and then with the paralyzed eye, the other eye being covered, the deviation of the normal eye under cover, when the paralyzed eye fixates, is greater than the deviation of the paralyzed eye when the normal eye fixates. In a concomitant strabismus the deviation is approximately equal. Cases of true paralysis tend to become concomitant before long.

In the absence of more data a diagnosis cannot be made. The prognosis for spontaneous recovery is not good. This is true whether the condition is paralytic or not. Care should be taken that the squinting eye does not become amblyopic from disuse (suppression to avoid diplopia). Should signs of this appear, the good eye must be occluded to compel use of the other eye. This is important for several years. If due care is exercised along these lines, operation may be postponed indefinitely without the sight becoming impaired. Operation to straighten the eye gives good results and should be done before the patient acquires an inferiority complex due to consciousness of his defect. The operative treatment is satisfactory. The operation of choice depends on whether there is a total paralysis or a moderate or a slight paresis and should of course be determined by the surgeon to whom the operation is entrusted. Often more than one operation is needed.

CHEMICAL DISINFECTION OF INSTRUMENTS

To the Editor—I am interested in using anhydrous acetone as a sterilizing agent for syringes, knives and instruments. I find that when I use a germicide containing formaldehyde I must rinse the syringes in distilled water before using them. I have been told that acetone can be used instead and that syringes may be taken out of the solution, air dried and used for intravenous work. After lancing pus pockets I usually soak the knives in 70 per cent rubbing alcohol for one hour. Could they then be returned to the acetone solution and used later without further sterilization? Please advise as to whether or not acetone is a satisfactory bactericidal agent. I have also been told that 99 per cent isopropyl alcohol is satisfactory for this purpose, but I find that it takes too long for air drying and leaves a greasy film on the syringe. A chemist suggested to me that a mixture of two thirds acetone and one third isopropyl alcohol would also be suitable for this purpose. Do you know of any other type of anhydrous antiseptic or bactericidal agent which would not rust instruments because of their water content and yet would still sterilize, and from which syringes could be air dried and used for intravenous work? If so would these agents be superior to the acetone or isopropyl alcohol or a mixture of the two?

M.D., New Jersey.

ANSWER—Chemical disinfection of instruments is a problem which has not yet been solved satisfactorily. Spaulding (*Surg., Gynec. & Obst.* 69:738 [Dec.] 1939) tested seven solutions commonly used for "cold sterilization" of instruments and found that, although these agents were able to kill vegetative bacteria within ten minutes, eighteen hours or longer was required by all of them to destroy sporulating organisms. The best results were obtained with formaldehyde-alcohol and borax-formaldehyde solutions, and these preparations also proved to be the least corrosive.

Soaking knives which have been used to lance pus pockets in "70 per cent rubbing alcohol" for one hour is not a method to be recommended, since it is doubtful whether the spores present are killed by such a procedure. Acetone is a relatively weak germicide, even against nonsporulating organisms, and there is no reason to believe that even prolonged submersion in this agent would contribute much to sterilization of contaminated instruments. As far as can be ascertained, the proposed mixture of acetone and isopropyl alcohol has not been investigated for its antibacterial action; but, since neither of the ingredients is very effective against spores when tested independently, one would not expect much from the combination.

The fact is, no single solution has been proposed as yet which combines the virtues of noncorrosiveness, reasonably rapid antibacterial activity and volatility sufficient for practical air drying without residue. Exposure to steam under pressure remains the most reliable and satisfactory method of sterilizing contaminated instruments. If "cold sterilization" is to be used, at least four steps are required: (1) thorough mechanical cleansing of the instruments so as to remove all blood, pus and other foreign material which might harbor bacteria, (2) prolonged soaking in a formaldehyde-alcohol or borax-formaldehyde solution, (3) rinsing with water and (4) drying under sterile conditions. There is no reason why acetone should not be used to facilitate this last step. Syringes and needles dried with acetone can safely be used for intravenous work, provided they are sterile.

LAUGHING AND PETIT MAL

To the Editor—A man aged 26 complains of drowsiness and petit mal attacks brought on by any humorous situation. He loses consciousness momentarily but usually recovers before he falls. Things go black, yet he is aware of his surroundings to some extent. He can control his attacks to a certain extent by refraining from laughing. A distant relative is believed to have reacted similarly. She got relief from thyroid therapy. His neurologic examination is negative. He has ruddy cheeks, weighs 155 pounds (70 Kg) and is 5 feet 6 inches (168 cm.) tall. The thyroid is normal. He has no other symptoms of thyroid insufficiency. The basal metabolic rate is -20. His temperature averages 97.6 to 98.2 F. The blood pressure is 105 systolic and 60 diastolic. There has been no response at all to 10 grains (0.65 Gm) of thyroid daily and no ill effects. I have increased it to 16 grains (1 Gm) daily (Armour's thyroid). Why haven't there been any toxic symptoms? How much thyroid can I give? Do you think this is the wrong therapy? Would you advise amphetamine for the drowsiness and phenytoin for the petit mal? Any advice will be appreciated.

C. L. Feiler, M.D., LaFayette, Calif.

ANSWER—The diagnosis of petit mal should be confirmed by an electroencephalogram. Laboratories for such examinations are now being established in various parts of the country. The literature on petit mal and electroencephalographic records is summarized by W. G. Lennox (*Science and Seizures*, New York: Harper & Brothers, 1941). As Lennox states, "the electrical record of the brain gives the most dependable evidence about the type and severity of the condition, the effect of treatment and the hereditary implications" (p. 93).

Prodromes of various types are frequently found in the period preceding a paroxysm. Gaicity and laughter are among them, and Dostoevsky, the Russian novelist, according to S. A. K. Wilson (*Neurology*, London, Edward Arnold & Co, 1940) had periods of "supreme ecstasy" before attacks. Thyroid treatment is not known to have any effect on petit mal.

Treatment should consist of phenobarbital or phenytoin sodium or both. The combination of these two drugs not infrequently is better than either given by itself. The use of amphetamine is not advised. The dose of phenobarbital and phenytoin sodium is gaged by trial, although if repeated electroencephalograms can be taken at intervals of three months a more exact evaluation of the amount of drug needed to control the attacks can be estimated.

The dose of thyroid is excessive and certainly carries dangerous potentialities. It is always advisable when administering thyroid to check carefully for heart rate, tremor and basal metabolic rate at frequent intervals. Furthermore, thyroid in this instance does not seem indicated.

GENERALIZED RASH AND PREMATURE DELIVERY

To the Editor—A woman aged 34 had three previous pregnancies. During each pregnancy there was a rash with considerable itching all over her body in the fourth month. Each pregnancy terminated prematurely at the beginning of the seventh month. The rash disappeared with the termination of pregnancy. Only one child survived. She is now pregnant again and I should like to prevent the rash and the premature delivery. The previous three deliveries took place out of town and I have only scanty information about them. The physical examination was negative with the exception of an inclination to increased blood pressure (145 systolic, 80 diastolic). The blood Wassermann reaction was negative; the urine examination was negative; the blood count, including a differential count, was normal. The urea nitrogen was within normal limits. The eye grounds were normal. I have the feeling that we have to deal in this case with an allergic reaction toward some products of pregnancy. Is there any possibility that the patient may be desensitized? Is progesterone indicated in this case?

Joseph Kaschmann, M.D., Hartford, Conn

ANSWER—The generalized rash which develops late in pregnancy is probably toxic in origin but it may be on an allergic basis. There have been no attempts at desensitizing such a patient, probably because the complication is so rare. Generalized cutaneous eruptions may be on the basis of a neurodermatitis, particularly in high strung, nervous persons. These patients should be treated with sedatives, such as the barbiturates, plenty of rest and a carefully selected diet. Locally, soothing antipruritic lotions usually suffice to give the patient relief.

The premature termination of pregnancy in this case may well be due to a latent vascular-renal disease which is not apparent in the usual examination. Other factors may play a role in such cases. Abnormalities of the reproductive tract or an abnormal endocrine balance occasionally accounts for such a course. The patient should have a basal metabolism test and, if the reading is below normal, thyroid in liberal amounts should be administered throughout the pregnancy. The use of vitamin E in the form of alpha or mixed tocopherols has been advocated. The latter can be given in 40 or 50 mg. capsules two or three times a day during the entire pregnancy. Progesterone is of value if it is administered during the first part of the pregnancy. One mg. parenterally can be given three times a week. Progesterone is likewise available as a salt which is efficacious by the oral route. Some success has been reported in the prolongation of pregnancy by the administration of this material during the last two or three months of the gestation. Unusual stimuli such as coitus, douches or violent exercise should be omitted during the last trimester.

POLLENS IN BRAZIL

To the Editor:—In order that I may properly advise a patient who is leaving for Rio de Janeiro, will you please publish what data are available relative to the pollen count in that area?

Allen L. Richardson, M.D., Detroit.

ANSWER—Data have not been published on pollen or fungus spore incidence in the immediate vicinity of Rio de Janeiro. However, daily studies were made at Belo Horizonte, some 175 miles north of Rio de Janeiro, by J. B. Greco, A. Oliveira Lima and A. Tupinambá from January 1940 until July 15, 1941. These investigators found little pollen from trees or weeds of any kind, although small amounts of Western ragweed (*Ambrosia psilostachya*) are present in the area. In their article awaiting publication in the *Journal of Allergy* exact figures are not given, but they note a definite grass season lasting approximately from the middle of May until the middle of June. The pollen at that season is attributed principally to Bermuda grass (*Cynodon dactylon*).

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LYMPHOGENOUS (LYMPHATIC) LEUKEMIA

DIAGNOSTIC, PROGNOSTIC AND THERAPEUTIC CON-
SIDERATIONS BASED ON AN ANALYSIS OF ITS
MORPHOLOGIC AND CLINICAL VARIANTS

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Lymphogenous leukemia comprises a group of pathologic states which have as their common attribute disordered and continued proliferation of lymphocyte-forming tissue not limited in response to any recognized irritant or other stimulus and manifested by continuous or intermittent alteration in the lymphocytes of the circulating blood.

Until the possible relations of leukemia to neoplastic, metabolic and infectious diseases have received greater elucidation no classification of the types of lymphogenous leukemia can be wholly satisfactory. The lack of other bases for the differentiation of leukemic lymphogenesis has led to reliance by many authors on clinical criteria, such as the apparent course of the disease and the gross regional involvement. The shortcomings of such a classification as a guide both to prognosis and to therapy are made evident by the study in retrospect of any considerable number of cases.

The application of methods for the differential staining of fixed blood films, supplemented by the oxidase reaction and supravital technics, has made possible recognition of the type of blood cell involved in the leukemic process and its approximate stage of development. Examination of circulating cells, lymph tissue and bone marrow provide grounds for the subdivision of lymphogenous leukemia. In all forms of leukemia pathologic variants of cell structure and behavior are common, but among persons with lymphogenous leukemia a distinct and persistent type of abnormality is not infrequently encountered. Such persons form a class which was first differentiated by Sternberg.¹ He observed the transformation of locally invasive lymphosarcoma into a frankly leukemic process characterized by lymphosarcoma cells in the blood stream.

Important studies descriptive of the structure of the circulating lymphosarcoma cell which serve to separate it distinctly from the lymphoblast, the young lymphocyte and the leukemic lymphocyte have been

published by Wiseman² and by Isaacs.³ In particular the study of blood films made on cover slips surfaced with brilliant cresyl blue and stained after drying with Wright's stain, as recommended by Isaacs, has proved of great value. Stained in this way the lymphosarcoma cell, according to Isaacs,³ possesses

certain differentiating features . . . the most marked being the peculiar characteristics of the nucleolus. This is usually eccentrically placed, single, very rarely multiple. . . the nucleolus stands out as a sky blue, round area, surrounded by a deep, blue black rim of chromatin which is piled up around it. . . In the true immature lymphocyte or lymphoblast, under these conditions, the nucleolus appears as a light blue "hole" or area in the chromatin structure, without the heavily staining rim. The nucleoli are more likely to be multiple in the immature lymphocytes or lymphoblasts than in the lymphosarcoma cell.

The lymphosarcoma cell, in films, varies in size from 7.5 by 9 microns to 12 by 13.5 microns. The nucleus is usually oval or oblong, occasionally being egg shaped (thicker at one end) in films. Kidney shaped or notched forms are common in some specimens. The stained chromatin is coarsely reticular and somewhat spongy in structure and the chromatin around the edge is thickened into a fairly definite nuclear wall, differing in this respect from the monocyte. The cytoplasm of the cell is sparse, deeply basophilic, and with the brilliant cresyl blue, Wright's stain, appears as a fine, blue lace-work.

It therefore becomes possible further to classify patients with lymphogenous leukemia into three main groups on the basis of the type of lymph cell concerned in the process: the lymphoblast, the lymphosarcoma cell and the lymphocyte. Separate consideration of the group with lymphosarcoma cell leukemia clarifies many apparently conflicting observations regarding the age incidence, the clinical course and the response to roentgen therapy of persons with lymphogenous leukemia.

The material of the present study comprises all patients with leukemia observed at the Simpson Memorial Institute from 1928 to 1940 inclusive on whom the recorded data are sufficient to permit reevaluation from a diagnostic standpoint. Blood films made for practically all these patients are on file, and whenever consideration of the original observations led to reasonable doubt regarding the correct classification the films were reexamined. In all, reference was made to the films of 125 patients. The disease of approximately 10 per cent of more than 200 patients originally diagnosed as some form of lymphogenous leukemia was reclassified as myelogenous or monocytic. A few

From the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan.

Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Sternberg, C.: Ueber Leukosarkomatose, Wien. klin. Wchnschr. 21: 475, 1908.

2. Wiseman, B. K.: Lymphopoiesis, Lymphatic Hyperplasia, and Lymphemia: Fundamental Observations Concerning the Pathologic Physiology and Interrelationships of Lymphatic Leukemia, Leukosarcoma and Lymphosarcoma, Ann. Int. Med. 9: 1303, 1936.

3. Isaacs, Raphael: Lymphosarcoma Cell Leukemia, Ann. Int. Med. 11: 657, 1937.

patients were rejected entirely as having either infectious disease or carcinoma invading the blood stream. The number of persons with leukemia was 434, and of this total the patients with lymphogenous leukemia numbered 190 (43.8 per cent). Included among the latter were many patients who had provided source material for a number of earlier communications (Isaacs,⁴ Rowe⁵ and Friedgood⁶).

There are in this series 52 cases of lymphoblastic, 70 of lymphosarcoma cell and 68 of lymphocytic leukemia. Further subdivision has been made into subleukemic and leukemic states at the time of first observation (table 1). The criteria employed for this purpose are as follows: Subleukemic: At least 10 per cent of the circulating white cells exhibit a specific type of abnormality on which the morphologic diagnosis is based, but the total of such cells does not exceed 10,000 per cubic millimeter. Leukemic: At least 50 per cent of the circulating white cells exhibit the type-specific abnormality, and their total exceeds 10,000 per cubic millimeter. Any realistic consideration of

types that a subleukemic picture is revealed in the majority of cases at the initial examination. The type of lymphatic hyperplasia referred to as pseudoleukemia was described by Cohnheim before present staining methods were available, and it has been found that in

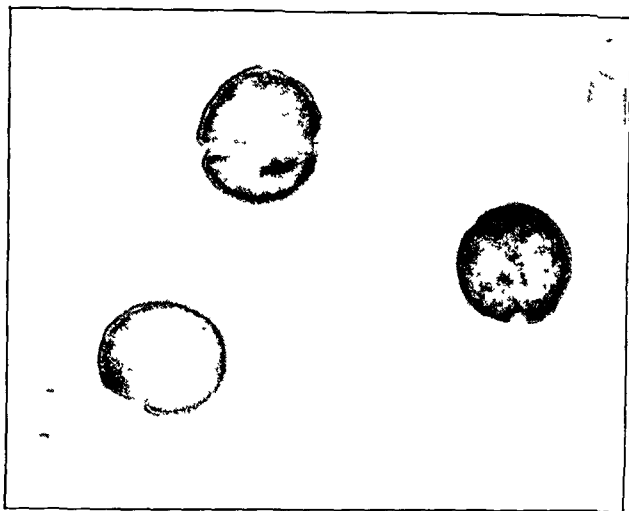


Fig. 1.—Lymphoblasts from a case of acute lymphoblastic leukemia. Figures 1, 2 and 3 are photomicrographs of cell types found in cases of lymphogenous leukemia. Cover slip blood films treated vitally with brilliant cresyl blue and stained with Wright's stain. Neutrophils and erythrocytes are shown for size comparison.

leukemia requires the relegation of quantitative changes in the circulating blood to a position of subsidiary prominence. Yet it is for patients whose disease is characterized by a leukocyte count within the usual range and by no great divergence from the normal in the distribution of cell types that accurate diagnosis becomes most difficult. All forms of lymphogenous leukemia have been observed to undergo transition from the subleukemic to the leukemic state, and vice versa, but it is in the lymphoblastic and lymphosarcoma cell



Fig. 2.—Lymphosarcoma cells from a case of subacute lymphosarcoma cell leukemia.

this disease, which may run an exceedingly chronic and benign course, there is usually a relative lymphocytosis, with at least the periodic appearance of atypical lymphocytes in the blood. Therefore it has seemed justifiable to apply the designation of subleukemia to it and to discard the term pseudoleukemia. With this view Krumbhaar⁷ and Forkner,⁸ among others, expressed agreement.

Pathologic examination when performed substantiated the hematologic diagnosis in all cases included

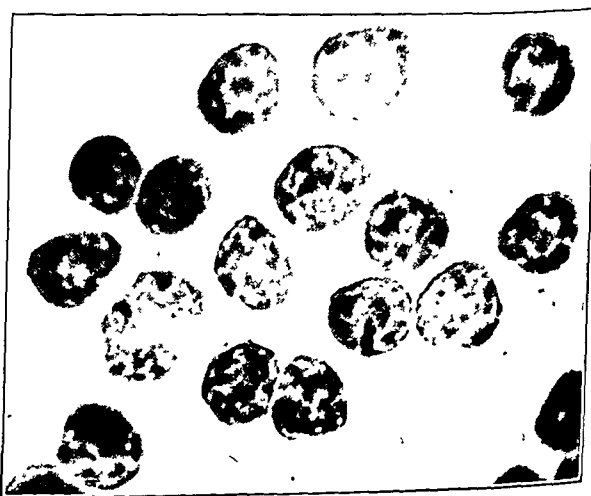


Fig. 3.—Lymphocytes from a case of chronic lymphocytic leukemia.

4. Isaacs, Raphael: The Treatment of Lymphatic Leukemia, *Am. J. Roentgenol.* **21**: 368, 1929; Blood Changes in the Leukemias and the Lymphomata and Their Bearing on Roentgen Therapy, *ibid.* **24**: 648, 1930; Present Status of the Study and Treatment of Leukemia, *J. Lab. & Clin. Med.* **17**: 1006, 1932; Maturing Effect of Roentgen Rays on Blood Forming Cells, *Arch. Int. Med.* **50**: 836 (Dec.) 1932; The Relation of Cell Types in Leukemia to Sensitivity to Radiation, *Tolia haemat.* **52**: 414, 1934; Lymphocyte Types and Their Clinical Significance, *J. A. M. A.* **106**: 326 (Jan. 25) 1936; Diagnosis of Leukemia and Response to Therapy, *Univ. Hosp. Bull., Ann Arbor, Mich.* **4**: 129, 1938; Correlation of Clinical and Laboratory Data in Diseases of Lymph Nodes, *J. Michigan M. Soc.* **37**: 1072, 1938; "Notched Nucleus Cell" Leukemia, *Program Cent. Soc. Clin. Research* **12**: 37, 1939; Lymphosarcoma Cell Leukemia.³

5. Rowe, S. N.: Mikulicz's Syndrome with Chronic Lymphatic Leukemia, *New England J. Med.* **202**: 863, 1930.

6. Friedgood, H. B.: The Effect of Lugol's Solution on Chronic Lymphatic Leukemia and Its Bearing upon the Pathogenesis of Exophthalmic Goiter, *Am. J. M. Sc.* **183**: 515, 1932.

7. Krumbhaar, E. B.: The Lymphomatoid Diseases (the So-Called Lymphoblastomas), *J. A. M. A.* **106**: 286 (Jan. 25) 1936.

8. Forkner, C. E.: Classification and Terminology of Leukemia and Allied Disorders, *Arch. Int. Med.* **60**: 562 (Oct.) 1937.

in this report. The number and percentage of patients who underwent various types of pathologic appraisal are shown in table 2.

The sex distribution and the age at onset of symptoms of the patients making up this study are pre-

sented in figure 4. Lymphoblastic leukemia is a cataclysmic disaster of childhood, occurring in the majority of cases in the first decade of life and beginning and terminating in 90 per cent before the age of 20. Two thirds of our patients were male. These data are in substantial agreement with those published by Minot and Isaacs,⁹ Ward,¹⁰ Ramsay,¹¹ Warren,¹² Mills,¹³ Simonson¹⁴ and others.

TABLE 1.—Leukemic and Subleukemic Blood Pictures of Patients with Lymphogenous Leukemia

Type of Leukemia	Subleukemic When First Observed		Leukemic When First Observed		Total Number of Patients
	Number	Percentage	Number	Percentage	
Lymphoblastic.....	28	53.8	24	46.2	52
Lymphosarcoma cell....	44	62.9	26	37.1	70
Lymphocytic.....	11	16.2	57	83.8	68
Total.....	83	43.7	107	56.3	190

At any period of life lymph tissue may undergo sarcomatous change, and after a variable interval the neoplastic cells may break through the enclosing connective tissue and circulate freely in the blood stream. Among females no significant predilection for any age is manifest, but among males the incidence of lympho-

somewhat less than that observed by Ward,¹⁰ Minot and Isaacs,⁹ Leavell¹⁷ and Wintrobe and Hasenbush.¹⁶

The earliest evidence of ill health in cases in which the disease subsequently was diagnosed as lymphogenous leukemia and the occurrence of various symptoms during the course of the disease are shown in tables 3 and 4. The most common early manifestations of lymphoblastic leukemia were lassitude, ease of fatigue and weakness, symptoms generally referable to anemia. In contradistinction to the observations of Warren,¹² Pierce¹⁸ and Mills,¹³ infection at the outset was noted relatively infrequently, although during the illness infections of the ears, the upper respiratory tract or the skin were observed in nearly half the cases. With both lymphosarcoma cell and lymphocytic leukemia the most common first sign of disease was enlargement of peripheral lymph nodes or the spleen, usually of the former. Throughout the course of lymphoblastic and lymphosarcoma cell leukemia, anemia, fever, hemorrhage and infection were the most conspicuous features. With the lymphocytic type fever and hemorrhage were noted much less frequently.

The duration of life after the appearance of symptoms in cases in which the date of death is known is presented in tables 5, 6 and 7. Death occurred within four months in 70 per cent of the cases of

TABLE 2.—Pathologic Substantiation of Diagnosis in Cases of Lymphogenous Leukemia

Type of Leukemia	Total Number of Cases	Pathologic Examination		Necropsy		Aspiration or Biopsy of Bone Marrow Only		Biopsy of Lymph Node Only		Examination of Bone Marrow and Lymph Node Only	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Lymphoblastic.....	52	25	48.1	16	30.8	7	13.5	1	1.9	1	1.9
Lymphosarcoma cell....	70	47	67.1	18	25.7	10	14.3	16	22.9	3	4.3
Lymphocytic.....	68	21	30.9	8	11.8	7	10.3	4	5.9	2	2.9
Total all types.....	190	93	48.9	42	22.1	24	12.6	21	11.0	6	3.1

sarcoma cell leukemia appears roughly to parallel that of lymphoblastic leukemia in childhood and that of lymphocytic leukemia in mature years. It is of interest that between the ages of 10 and 40 the sexes are affected equally by lymphosarcoma cell leukemia, whereas outside these limits there is a decided predominance of males with the disease. Of the complete series 70 per cent are males.

Lymphocytic leukemia in this series was not found before the fourth decade except in 1 woman who had symptoms of the disease at 28. The age distribution agreed closely with that observed by Rosenthal and Harris¹⁵ and by Wintrobe and Hasenbush.¹⁶ As with the lymphosarcoma cell form women were generally affected at an earlier age than men. Sixty per cent of males were more than 60; whereas 80 per cent of females were less than 60. For the whole group with lymphocytic leukemia the percentage of men was 62,

lymphoblastic leukemia, with an average survival period for the whole group of four months. The duration of lymphosarcoma cell leukemia is extremely variable, but nearly one-half the patients died within one year of

TABLE 3.—Earliest Evidence of Ill Health in Lymphogenous Leukemia

First Evidence of Disease	Type of Leukemia					
	Lymphoblastic		Lymphosarcoma Cell		Lymphocytic	
	Num-ber	Per-centage	Num-ber	Per-centage	Num-ber	Per-centage
Tumor of lymph glands or spleen....	5	9.6	28	40.0	28	41.2
Symptoms referable to anemia.....	21	40.4	18	25.7	21	30.9
Evidence of infection.....	7	13.5	10	14.3	8	11.8
Headache.....	3	5.8	1	1.4	1	1.5
Pain in joints.....	6	11.5	1	1.4	0	0
Digestive symptoms.....	3	5.8	1	1.4	2	2.9
Miscellaneous pain or discomfort...	0	0	1	1.4	2	2.9
Pressure of spleen or glands.....	0	0	3	4.3	1	1.5
Fever.....	4	7.7	1	1.4	0	0
Hemorrhage.....	3	5.8	2	2.9	0	0
Symptoms referable to increased basal metabolism.....	0	0	2	2.9	3	4.4
None; incidental finding.....	0	0	2	2.9	2	2.9
Total cases.....	52	100.1	70	100.0	68	100.0

the onset of symptoms or the observation of a tumor. Moreover, it is known that in this condition the first manifestation of disease usually precedes by a period of months, sometimes of years, the invasion of the blood

9. Minot, G. R., and Isaacs, R.: Lymphatic Leukemia: Age Incidence, Duration and Benefit Derived from Irradiation, Boston M. & S. J. **191**: 1, 1924.
10. Ward, G. R.: The Infection Theory of Acute Leukemia, Brit. J. Child. Dis. **14**: 10, 1917.
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12. Warren, S. L.: Review of Literature and Twenty-Eight New Cases of Acute Leukemia, Am. J. M. Sc. **178**: 490, 1929.
13. Mills, S. D.: Acute Lymphatic Leukemia in Childhood: A Study of Sixty Cases with Especial Reference to the Cytologic Characteristics of the Blood, J. Pediat. **6**: 634, 1935.
14. Simonson, L. M.: Acute Leukemia in Childhood, Wisconsin M. J. **37**: 110, 1938.
15. Rosenthal, N., and Harris, W.: Leukemia: Its Diagnosis and Treatment, J. A. M. A. **104**: 702 (March 2) 1935.
16. Wintrobe, M. M., and Hasenbush, L. L.: Chronic Leukemia: The Early Phase of Chronic Leukemia, the Results of Treatment and the Effects of Complicating Infections; A Study of Eighty-Six Adults, Arch. Int. Med. **64**: 701 (Oct.) 1939.
17. Leavell, B. S.: Chronic Leukemia: A Study of the Incidence and Factors Influencing the Duration of Life, Am. J. M. Sc. **100**: 329, 1938.
18. Pierce, M.: Childhood Leukemia, J. Pediat. **8**: 66, 1936.

by lymphosarcoma cells. The duration of life in lymphocytic leukemia, although variable, was longer in this series than in others reported in the literature (Minot and Isaacs,⁹ Leavell¹⁷ and Wintrobe and Hasenbush,¹⁶ averaging four and eighty-five-hundredths years. The difference is attributed partly to the careful exclusion

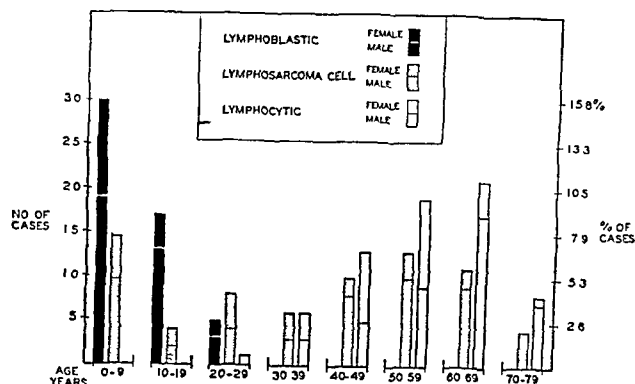


Fig. 4.—Incidence of lymphoblastic, lymphosarcoma cell and lymphocytic leukemia according to sex and age of patient at onset of symptoms

of cases believed to represent lymphosarcoma cell leukemia and in part to efforts by the staff and the social service department to remain informed concerning the status of former patients, thus preventing many with more chronic disease from becoming lost to observation.

When observations were sufficiently frequent to justify classifying the patients according to the quantitative characteristics of the blood picture throughout the course of their illness, the duration of life from the onset of symptoms and from the date of the first observation was considered with reference to subleukemic and leukemic changes (table 8). Decreases of the leukocyte count induced by roentgen therapy were not considered in this classification. In patients with lymphoblastic and lymphosarcoma cell leukemia the

TABLE 4.—Symptoms Occurring During Course of Lymphogenous Leukemia

Symptoms	Type of Leukemia					
	Lymphoblastic		Lymphosarcoma Cell		Lymphocytic	
	Num.	Per centage	Num.	Per centage	Num.	Per centage
Symptoms referable to anemia.....	52	100.0	64	91.4	55	80.9
Susceptibility to infection.....	25	48.1	39	55.7	23	41.0
Headache.....	7	13.5	17	24.3	9	13.2
Pain in joints.....	11	21.2	4	5.7	0	0
Symptoms referable to gastrointestinal tract.....	10	19.2	16	22.6	13	19.1
Miscellaneous pain or discomfort...	5	9.6	4	5.7	11	16.2
Pressure of glands.....	9	17.3	20	28.6	17	25.0
Pressure of spleen.....	2	3.8	6	8.6	8	11.8
Fever.....	44	84.6	43	61.4	12	17.6
ed.....	39	75.0	27	38.6	13	19.1
.....	0	0	12	17.1	16	23.5
None.....	0	0	0	0	2	2.9

duration of life was appreciably shorter in the presence of a high white cell count, whereas no such difference was observed among patients with lymphocytic leukemia.

The immediate causes of death among 86 patients with lymphogenous leukemia are shown in table 9. The greatest hazard to life in lymphocytic leukemia is the susceptibility to infection, particularly pneumonia, but for patients with this disease, including many elderly persons, there is at least one chance in three of dying of a cause wholly unrelated to leukemia.

Differentiation of lymphogenous leukemia according to the morphologic characteristics of circulating leukemia cells aids in the decision regarding the suitability of roentgen therapy and contributes to the determination of the dose, the number of treatments and the regions of the body to receive treatment. A summary of the results obtained from roentgen therapy is presented in table 10. In the evaluation of data, when more than one course of therapy was employed the most favorable response was selected.

The experience gained from this series is in agreement with that of Stengel and Pancoast,¹⁹ Minot and Isaacs,⁹ Simonson¹⁴ and others in demonstrating the negative and often harmful effects of radiation therapy for lymphoblastic leukemia. Therefore I feel justified in withholding this form of treatment from patients with the disease, even when urged to employ it by their relatives.

In the management of lymphocytic leukemia roentgen therapy has proved of much greater value than the use of arsenicals or any other form of treatment employed.

TABLE 5.—Duration of Lymphoblastic Leukemia After the Appearance of Symptoms in Forty-Seven Cases: Average Duration, Four Months

	Months					
	0-2	3-4	5-6	7-8	9-10	11-12
Number of cases.....	15	18	6	4	2	2
Percentage of cases....	31.9	38.3	12.7	8.5	4.3	4.3

TABLE 6.—Duration of Lymphosarcoma Cell Leukemia After the Appearance of Symptoms in Sixty-One Cases: Average Duration, Thirty-One and Three-Tenths Months

	Years										
	0	1/2	1	2	3	4	5	6	7	8	9
Number of cases...	17	13	9	6	2	3	2	3	3	1	1
Percentage of cases....	28.0	21.3	14.8	9.8	3.3	4.9	3.3	4.9	4.9	1.6	1.6
	49.3										

The usual procedure has involved the use of 200 kilovolts and a dose per treatment of 150 to 200 r measured in air to ports ranging from 10 by 10 to 15 by 15 cm. A series of daily treatments numbering usually eight to twelve is applied regionally to the peripheral lymph node areas, the mediastinum, the retroperitoneal region and the spleen. The indications for therapy are anemia, debility, evidence of increased metabolism, pressure symptoms and, least important, a progressive rise in the leukocyte count. The interval between courses of therapy is made as long as possible. Anemia and thrombocytopenia do not militate against the effectiveness of roentgen therapy in cases of lymphocytic leukemia except as they may be part of the terminal cachexia of the disease. Many patients retain the property of responding to roentgen therapy, given many times over a period of years. It appears that ultimate failure to respond depends not so much on an acquired "refractory" state, brought about by previous therapy, as on the progressive nature of the disease, often characterized by increasing proliferation of young lymphocytes and lymphoblasts.

19. Stengel, A., and Pancoast, H. K.: The Treatment of Leukemia and Pseudoleukemia with X-Rays, J. A. M. A. 59: 1166 (Sept. 23) 1912

Greater caution is needed in the treatment of lymphosarcoma cell leukemia than in that of lymphocytic leukemia, and the results generally are less satisfac-

TABLE 7—Duration of Lymphocytic Leukemia After the Appearance of Symptoms in Thirty-Three Cases: Average Duration, Fifty-Eight and Two-Tenths Months

	Years									
	1	2	3	4	5	6	7	8	9	10
Number of cases.	4	2	6	7	3	2	4	2	1	2
Percentage of cases	12.1	6.1	18.2	21.2	9.0	6.1	12.1	6.1	3.0	6.1

tory. In patients with lymphosarcoma cell leukemia an exceedingly rapid decrease in the white cell count after irradiation is common and there may be associated

SUMMARY AND CONCLUSIONS

A series of 190 cases of lymphogenous leukemia subdivided into cases of lymphoblastic, lymphosarcoma cell and lymphocytic leukemia on the basis of the morphologic characteristics of the pathologic lymph cells in the circulating blood, is analyzed with respect to age and sex incidence, symptoms, duration of life and response to therapy.

Lymphoblastic leukemia is a disease of childhood, affecting twice as many males as females and characterized by anemia, fever, a tendency to uncontrollable hemorrhage and susceptibility to infection. Its duration is usually less than four months, and its course in most cases is either uninfluenced or adversely affected by roentgen therapy.

Lymphosarcoma cell leukemia is a distinct morphologic and clinical entity, characterized by the presence

TABLE 8—The Duration of Life in Patients with Lymphogenous Leukemia Observed Until Death, Classified According to Quantitative Changes in Circulating Leukemic Cells

Type of Leukemia	Total Cases	Subleukemic Throughout			Leukemic Throughout			Subleukemic Becoming Leukemic			Leukemic Becoming Subleukemic			Alternating Subleukemic and Leukemic		
		A* %	B Mo.	C Mo.	A %	B Mo.	C Mo.	A %	B Mo.	C Mo.	A %	B Mo.	C Mo.	A %	B Mo.	C Mo.
Lymphoblastic....	37		4.5	1.6	29.7	2.9	0.8	16.2	3.3	1.5	10.8	5.0	2.0	13.5	4.4	2.0
Lymphosarcoma cell	40	42.5	26.1	15.4	25.0	12.3	2.4	17.5	14.4	7.4	5.0	51.0	41.0	10.0	55.5	23.8
Lymphocytic	25	8.0	52.0	22.0	76.0	52.6	23.4	4.0	12.0	9.0	12.0	60.0	48.7	0	0	0

* Column A in each group gives the percentage of cases, column B the average duration after the onset of symptoms and column C the average duration after the first observation

TABLE 9—Immediate Cause of Death in Cases of Lymphogenous Leukemia

Type of Leukemia	Toxemia		Hemorrhage		Infection		Debility		Unrelated Cause		Total Number
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	
Lymphoblastic	22	71.0	8	25.8	1	3.2	0	0	0	0	31
Lymphosarcoma cell	15	46.9	2	6.2	9	28.1	3	9.4	3	9.4	32
Lymphocytic ..	0	0	1	4.3	8	31.8	6	26.1	8	31.8	23
Total all types	37	43.0	11	12.8	18	20.9	9	10.5	11	12.8	86

TABLE 10—Response to High Voltage Regional Roentgen Therapy in Cases of Lymphogenous Leukemia

Type of Leukemia	Total Number	Unfavorable *		None		Fair		Good		Very Good		Excellent	
		Num-ber	Per-centage	Num-ber	Per-centage	Num-ber	Per-centage	Num-ber	Per-centage	Num-ber	Per-centage	Num-ber	Per-centage
	10	3	30.0	4	40.0	3	30.0	0	0	0	0	0	0
	47	11	23.4	8	17.0	13	27.7	6	12.8	4	8.5	5	10.6
	43	0	0	2	4.7	6	15.8	9	20.9	10	23.3	16	37.2

* Unfavorable, exacerbation of leukemic process with early death; none, course of disease apparently unaltered; fair, transient clinical improvement but no real remission; good, significant clinical and hematologic improvement lasting 3 to 6 months; very good, significant clinical and hematologic improvement lasting 6 to 12 months; excellent, significant clinical and hematologic improvement lasting more than 12 months

severe toxic symptoms. Localized therapy directed only toward the relief of pressure manifestations is often advisable for such patients, but some derive prolonged benefit from roentgen therapy to all of the major regions of lymphatic tissue.

Other means of treatment which have been used with some success on a few patients with lymphocytic or lymphosarcoma cell leukemia include liver preparations administered orally and parenterally, compound solution of iodine (Lugol's solution) and solution of potassium arsenite (Fowler's solution), the last-mentioned remedy in doses gradually increasing to 30 minims (1.8 cc.) administered daily or until toxic effects are observed. In the treatment of lymphoblastic leukemia symptomatic relief is all that is attempted and reliance is placed chiefly on blood transfusion, which in some cases results in transient reduction of activity of the leukemic process

of lymphosarcoma cells in the blood stream. Males are predominantly affected, and the disease may occur at any age. After the development of a leukemic blood picture the course is usually rapid, but in some cases roentgen therapy cautiously employed exerts a noticeably beneficial effect.

Lymphocytic leukemia affects more males than females and occurs almost exclusively in the middle and later years of life. Its course may be relatively benign and is usually favorably influenced by roentgen therapy.

The prognosis and therapeutic indications cannot safely be based solely on morphologic characteristics of the affected cells, but the histologic condition of the blood and the blood-forming organs as a whole, considered in conjunction with the clinical features, provides a basis for a plan of treatment and a reasonably accurate prediction of the course of the disease.

LYMPHATIC LEUKEMIA

IMPORTANT FACTS ADDITIVE TO ITS CLINICAL
AND HEMATOLOGIC RECOGNITION

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Progress in medicine always has depended primarily on the solution of the basic problem of the mechanism of the production of disease. In some fields, as for example that of infectious diseases, the basic factors are known in quantity sufficient to provide diagnosis and treatment on a plane of efficiency which removes many of them from a position of threat to longevity. In other fields, however, so few of these factors are known that any attempt to reconstruct the mechanism of these diseases can result in nothing more acceptable than a working hypothesis, with all the limitations that this implies. Nevertheless, such working hypotheses, provided that they are founded on facts, even if there are few, are fundamentally important in laying a foundation on which construction, and in certain details perhaps reconstruction, may lead to a universally acceptable account of the mechanism of the disease. Additionally, of immediate practical value, a system of thought the elements of which do not violate the facts observed in the clinic and laboratory aids materially in the recognition, treatment and prognosis of the disease.

Specifically, these principles have been applied to the problem of the primary diseases of the lymphatic tissues. The present paper summarizes in broad perspective a working hypothesis applicable to a sounder understanding of these dyscrasias as seen in the clinic. It is important to add that whatever shortcomings in this hypothesis may be revealed by future investigations, the theory works in the clinic and makes possible exact identification, better treatment and a more reasonable prognosis than was hitherto possible. Because this hypothesis works in practice, it is not felt that this fact, obversely stated, detracts from the possible soundness of the theory.

NOMENCLATURE

From any point of view, the terms lymphoma and lymphoblastoma to designate any of the primary diseases of the lymphoid tissues do not appear desirable. The use of either serves (1) to deny that there is any virtue in trying to determine the mechanism of the production of the several types of lymphoid diseases, (2) to deny that there is any fundamental difference between them or (3) to constitute *prima facie* evidence of the technical inability of the diagnostician (or pathologist) to differentiate between them. Of these three inferences, the latter is the only one that might be acceptable. When so used, the diagnosis should be construed by the interested parties on this basis and not in a sense that further dissection of the exact nature of the process is futile and of no theoretical or practical value. For example, a case of lobar pneumonia might be labeled as one of "infectious disease" rather than

"lobar pneumonia, pneumococcus type I." The charge is made here that this use of the term, while not essentially incorrect, is too broad and conveys too little.¹

A final statement on the nomenclature of the lymphatic diseases includes the fact that while descriptive pathology may justify a variety of terms, a thorough study of the clinical diseases in this category indicates that the terms lymphosarcoma, leukosarcoma and lymphatic leukemia (including the type of Cohnheim) are accurate and adequate to embrace all the now known types of noninfectious primary lymphocyte dyscrasias. Lymphatic leukemia without lymphemia is of course a contradiction unless one defines the term leukemia as a disease entity without the original implication of leukemia meaning "white blood."

MECHANISM OF PRODUCTION OF THE PRIMARY
LYMPHATIC DISEASES

A survey of the known facts concerning the growth characteristics of cells shows that multiplication of these elements is determined by two, and only two, factors, namely maturation and division. Abnormalities in the growth of cells therefore theoretically must be modification in the participation of these two factors acting singly or together. It is therefore possible to construct a list of the theoretically possible lymphoid diseases and compare these with the forms of lymphoid diseases actually observed in the clinic. A diagrammatic representation of this relationship is shown in figure 2. In the center of the circle the origin of the lymphocyte is shown from the reticular cell, the definitive circulating cell achieving its mature form through successive stages of maturation and division. Normally maturation and division occur simultaneously; if either is interfered with, diseases primarily involving the lymphocyte are theoretically possible.

As shown in figure 2, this works out theoretically to give three types of hyperplasia—one with normal lymphocytes and two with immature lymphocytes, the cells of both showing defects in maturation but only one showing neoplastic features. The placing of the diseases in this figure corresponding with the mechanism that is suggested as at fault results from a detailed study of the clinical entities named, all available criteria being applied which have come into my possession from ten years of study in this field. Briefly stated, when the lymphocytes produced in the course of the several types of primary lymphatic diseases are assayed for evidences of maturation with the criteria previously published,¹⁰ it is found that maturation proceeds according to and parallel with the numerical fluctuations in the lymphocytes (in consonance with the speed of production) only in the lymphopoiesis of the known infectious states (fig. 3¹¹). The lymphocytes in chronic lymphatic leukemia do not show abundant maturative phenomena when large numbers of cells are being produced (fig. 4¹²). Neither do they possess certain features regularly seen in neoplasia in general. On the other hand, the lymphocytes in cases of acute lymphatic leukemia and of lymphosarcoma, either with or without

1. A detailed discussion of nomenclature appears here in the author's reprints.

10. Wiseman, B. K.: Criteria of the Age of Lymphocytes in the Peripheral Blood, *J. Exper. Med.* 54: 271, 1931.

11. Wiseman, B. K.: Lymphopoiesis, Lymphatic Hyperplasia, and Lymphemia: Fundamental Observations Concerning the Pathologic Physiology and Interrelationships of Lymphatic Leukemia, Leukosarcoma and Lymphosarcoma, *Ann. Int. Med.* 9: 1303, 1936.

12. Wiseman, B. K.: The Lymphadenopathy Problem in Blood, Heart and Circulation; Symposium, Publication 3, American Association for the Advancement of Science, 1940, p. 20.

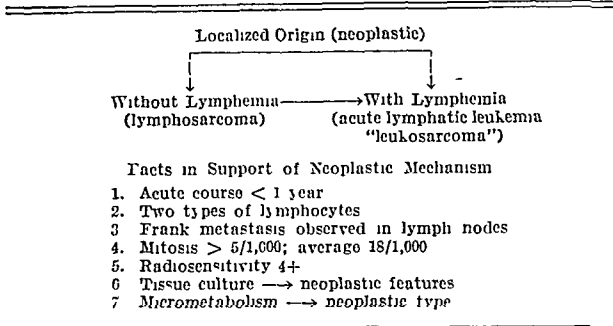
From the Department of Medicine, Ohio State University College of Medicine. Supported in part by a grant from the Cowley Fund.

Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of some illustrations, tables and text. The complete article appears in the author's reprints.

leukemic blood (leukosarcoma), while also not showing the maturative phenomena expected, do possess all the attributes of neoplastic cells. On the basis of these observations, therefore, it would appear that figure 2 should be completed as shown.

TABLE 4.—First Mechanism of Production of Lymphatic Leukemia



Diagrammatically summarized, this indicates that lymphatic leukemia, when neoplastic in origin, begins in a localized focus of neoplastic lymphocytes, either immediately characterized in the blood by lymphemia or after an indeterminate period during which time blood examinations appear normal

With this approach, all diseases that are primary in the lymphocyte belong in one of these three categories, and if these categories are in fact separate and distinct entities, as suggested by the completion of figure 2, they should as groups present distinct characteristics of various kinds. This is found to be true, as analysis of many cases of each of the three groups shows distinctions in the clinical course, autopsy findings, condition of the cells, microscopic examination, radiosensitivity, tissue culture and micrometabolism of the lymphocytes as summarized in table 1. The factual data supporting this concept have previously been published.^{12a}

THE CLINICOHEMATOLOGIC ASPECTS OF LEUKEMIA

The preceding discussion suggests that, when studied carefully, all the primary noninfectious diseases of the lymphocyte are basically states of leukemia. When defi-

narily present difficult diagnostic problems. In contrast, lymphosarcoma without lymphemia and lymphatic leukemia without lymphemia are identified usually by recourse to diagnostic measures in addition to a simple examination of the peripheral blood.

Lymphosarcoma With and Without Lymphemia.—

The present disorder in nomenclature and the indefinite criteria used in determining a tissue diagnosis in the lymphatic diseases make it impossible to compare the experience of one clinic with that of another. For example, lymphosarcoma usually means one thing to one group (with the microscopic examination, condition of the blood, clinical course and all the rest varying accordingly) and something else to another. However, if care is exercised in disqualifying for this category all lymphoid tumors that involve primarily the reticulum cell (including Hodgkin's disease) and the pseudoleukemia of Cohnheim, our experience indicates that there are few cases of lymphosarcoma, if any, which do not eventually terminate in leukemia and which run a clinical course exceeding one year. The foregoing state-

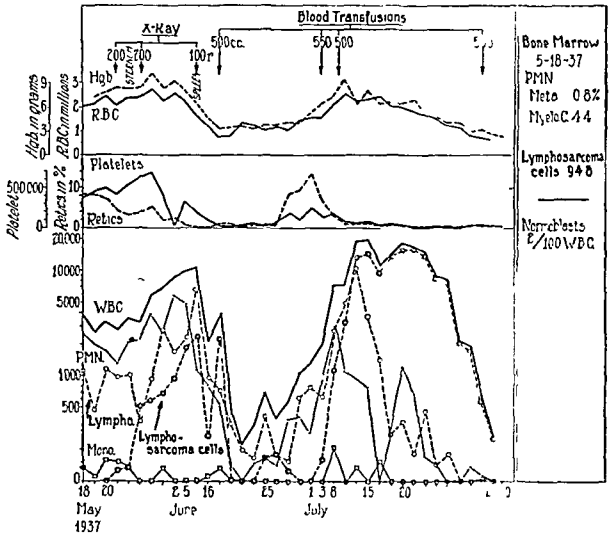


Fig. 1 (L. H., a woman aged 43).—The hematologic history in a typical case of lymphosarcoma-leukosarcoma. Note that the "sarcoma" lymphocytes were not found in the peripheral blood during three periods (May 18, 20-June 21, 24-June 30, July 1). Between these periods on two occasions the values for these cells rose to high levels. At all times, however, the sternal bone marrow was composed chiefly of the pathologic lymphocytes. Interesting also is the terminal leukopenia in which the sarcoma cells constituted practically 100 per cent of the circulatory white blood cells. Charting is on a semilogarithmic scale. A section of a lymph node is illustrated in 5 and 6, figure 5.

TABLE 5.—Sixty-Six Cases of Lymphosarcoma-Leukosarcoma

Distribution by sex: male 40, female 26	
Distribution by age: range from birth to 65 years (0-10) 25, (10-20) 10, (20-30) 8, (30-40) 9, (40-50) 7, (50-60) 4, (60-70) 3	
Clinical onset:	
Fatigue syndrome (including pallor and adenopathy)	32 "P. A."
Adenopathy alone	6
Hemorrhage and/or purpura	12 "purp hemorrhagica"
Gastric (chiefly nausea and vomiting).	6 } acute surgical con-
Abdominal pain	3 } dition in abdomen
Rheumatic (including bone pain)	6 "arthritis"
Upper respiratory infection	5 coryza
Dyspnea (obstruction)	2

This summarizes the distribution by age and sex of 66 consecutive patients with lymphosarcoma and leukosarcoma, together with the symptoms or signs, by groups, at the onset of the disease. In the right hand column is indicated the most common diagnosis (when wrong) made by the referring physician

nite lymphemia is present, there is little difficulty in identification of the type of lymphoid disorder. Thus, lymphosarcoma with lymphemia (leukosarcoma, "acute lymphatic leukemia") and lymphatic leukemia with lymphemia ("chronic lymphatic leukemia") do not ordi-

ments adequately explain the entirely dissimilar conclusions found in different publications; for example, in a recent paper from the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City,¹⁸ only 6.6 per cent of the patients diagnosed (histologically) as having lymphosarcoma showed blood changes of leukemia, and of all the patients so diagnosed there was a five year survival rate of 10.6 per cent. Since of the 196 cases reviewed, 184 were said to be of the reticulum cell "lymphosarcoma" type, it would appear that an indeterminate but only small number of those reported can rigidly be classed as diseases of the lymphocyte itself. Histologically, in this clinic the term lymphosarcoma is confined to lymphoid dyscrasias in which the cell primarily involved can be identified as the lymphocyte and shows morphologic alterations

12a. Wiseman.¹² A summarization of these data is given in the author's reprints.

18. Sugarbaker, E. D., and Craver, L. F.: Lymphosarcoma, J. A. M. A. 15: 17 (July 13) 1940.

of the neoplastic type (previously described¹¹). These tissues are rich in lymphocytic mitoses and show no increase in fibrous tissue.

When lymphosarcoma is restricted to this category, it is my experience that all cases of lymphosarcoma are basically leukemic states, neoplastic in origin and running an acute or subacute course. In my opinion this type of leukemia corresponds to the leukemia seen in laboratory animals and, for the reasons stated earlier in this paper, is fundamentally different from "chronic lymphatic leukemia." A summarization of this concept is shown in table 4.

My experience with this disease comprises 66 cases. The distribution by age and sex with the observed types of clinical onset are condensed in table 5. Almost half of these cases initially show severe anemia, often without associated adenopathy or splenomegaly. The peripheral blood when altered is myelophthisic and/or leukemic, often resembling when not leukemic that seen in pernicious anemia. Aspiration of a sample of sternal bone marrow reveals that most of the marrow tissue is replaced with neoplastic lymphocytes and, particularly in the early phases of the disease, there is often no detectable invasion of the peripheral blood with these abnormal cell forms (fig. 1). Later when lymphemia occurs samples of the peripheral blood show that the increase in white blood cells is due solely to neoplastic lymphocytes, although normal lymphocytes may always be identified, often in the same oil immersion field of the microscope, side by side with the pathologic cells. Figure 1¹⁰ shows the hematologic course of events in 1 of these patients with a typical clinical and hematologic picture of pernicious anemia, even to a histamine-

Later, as shown, the blood stream showed invasion with pathologic lymphocytes of the neoplastic type. Attention is also directed to the severe thrombocytopenia that (characteristically) developed in this patient. As figure 1 indicates, excessive thrombocytopenia may be the chief early developing feature of this disease and accounts for the fact that hemorrhage and/or purpura in our series was the second most common presenting onset of this type of leukemia. Most cases of this variety of leukemia exhibiting hemorrhage have been referred to us as cases of essential thrombocytopenic purpura. Usually examination of the blood but often of the bone marrow is necessary to clear up the diagnosis. The third most common onset consists of abdominal symptoms, occasionally with the urgent decision to be made for or against immediate surgery. One of the patients in this summary table presented a classic syndrome of acute appendicitis. It is our belief that the origin of these symptoms are attributable to hemorrhage in various tissues determining the localization of symptoms within the abdomen, since all showed low values for blood platelets. Joint pain, bone pain and onsets with "upper respiratory infections" were next most common as the initial presenting clinical features in our series. Two of the latter were felt to be cases of granulocytopenia by the referring physician because of the very low value for peripheral circulating granulocytes. Dyspnea was the presenting symptom in 2 cases of this series. One of these revealed a large mediastinal mass without anemia, thrombocytopenia or neutropenia and without evidence in the peripheral blood of pathologic lymphocytes (fig. 3). In this instance aspiration of bone marrow on the patient's admission to the hospital on November 22 showed only 16 per cent of the marrow elements to be lymphosarcoma cells. This was twelve days before the abnormal types of lymphocytes were found in the peripheral blood.

Attention is also called to a feature on this chart showing that lymphemic levels of 95,000 "sarcoma" cells per cubic millimeter of blood were obtained rapidly after an abrupt rise. Whether lymphemia is induced by roentgen therapy, as has been suggested,⁴ is not

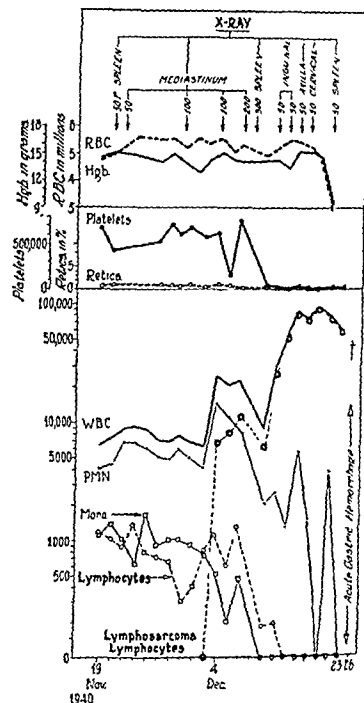


Fig. 3 (H. P., a youth aged 16).—The hematologic history in a case of lymphosarcoma which eventually terminated in leukosarcoma. The plotting is on a semilogarithmic scale. Attention is directed to the plotting of two curves for the lymphocytes; when the lymphatic tissue became infiltrated extensively with the lymphosarcoma cells, the normal lymphocytes disappeared from the peripheral blood. This is comparable to the mechanism that produced the thrombocytopenia. The course of the disease was probably too rapid for the reflection of anemia in the peripheral blood except terminally, as red blood cells have a life period of at least thirty days. Note also the parallel fall in granulocytes and normal lymphocytes at the same time that the platelets disappear.

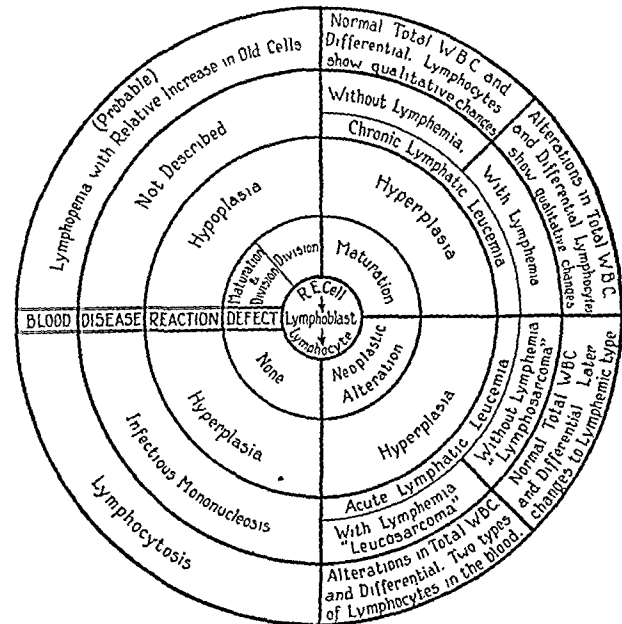


Fig. 2.—The primary diseases of the lymphocyte. Theoretically possible types of reactions of the lymphocyte with the diseases thereby produced. The second zone from the center indicates hyperplasia or hypoplasia induced by suppression of maturation and/or division occurring during the life cycle of the lymphocyte shown diagrammatically in the center. The type of disease produced by these tissue reactions is suggested in the next to the outer zone, with the type of blood reaction summarized in the outermost zone.

refractory achlorhydria. There was no adenopathy or splenomegaly. An aspirated sample of bone marrow, however, permitted identification of the disease when every other available method of examination failed.

19. All high voltage roentgen therapy of patients in this communication was given under direction of Dr. Hugh Means, roentgenologist to the University Hospital. All blood counts were made by the supravitral technic.

known. The late precipitous fall in red cells preceded by near zero platelet levels reflects the increased degree of infiltration of the bone marrow with lymphosarcoma cells, as examination at this time showed the bone marrow tissue to be almost completely replaced with this type of pathologic cell. The terminal gastric hemorrhage is attributed to the almost complete absence of platelets from the blood stream.

It is again emphasized that the diagnosis of this type of leukemia before lymphemia appears is often impossible without recourse to study of the bone marrow. When peripheral adenopathy is present, biopsy is an additional aid and reveals a variable amount of replacement of the lymph node with sheets of pale staining cells rich in mitosis, often interspersed with islands of normal lymphocytes. The diagnostic features of this variation of lymphosarcoma is summarized in table 6.

Lymphatic Leukemia.—The second mechanism that results in lymphatic leukemia bears little resemblance to that of the series of cases just cited. Other than the assumption, not supported by facts, that the leukemia of laboratory animals is identical with that occurring in man, there is little reason to believe that "chronic" lymphatic leukemia is neoplastic in origin. On the other hand, there is an appreciable amount of data that this form of leukemia is neither infectious nor neoplastic. By elimination of these two suggested etiologic theories an obscure metabolic origin would be not at all improbable. Table 7 summarizes diagrammatically my concept of a second mechanism for the production of leukemia of the benign lymphatic type.

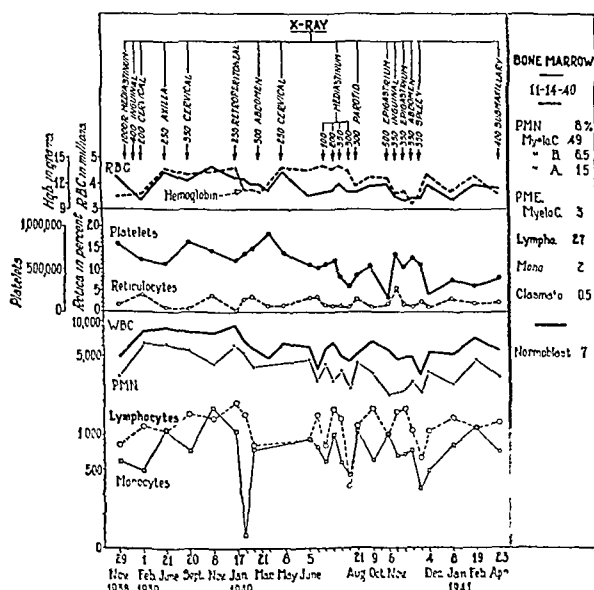


Fig. 6 (G. Von B., a man aged 61).—Showing the fluctuations of the blood elements with high voltage roentgen treatment in case of lymphatic leukemia without lymphemia followed over a period of two and a half years. The charting is on a semilogarithmic scale. A typical sternal bone marrow differential is shown as of Nov. 11, 1940, after 1,900 r of high voltage therapy.

Lymphatic Leukemia with Lymphemia ("Chronic Lymphatic Leukemia").—Illustrative material and cases centering about this variety of lymphatic leukemia has been the subject of many papers which have been well summarized by Forkner.²⁰ When lymphemia is present

or when there is a specific alteration in the differential count a diagnostic problem is not usually encountered. Transitions between lymphatic leukemia with lymphemia and the variety without lymphemia are occasionally seen. One such case is illustrated in figure 4.

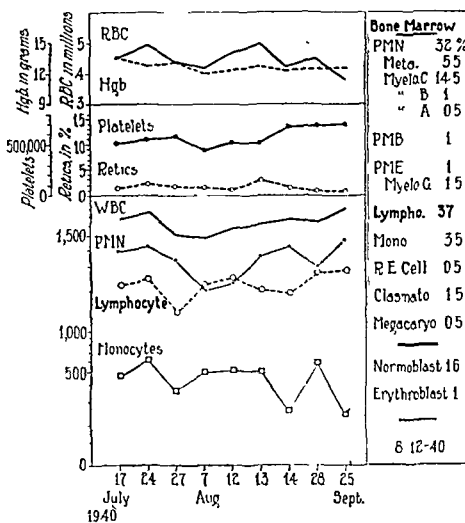


Fig. 8 (A. S., a woman aged 32, with onset at 13 years).—Showing that, exceptionally, even after twenty years of lymphatic leukemia (type Cohnheim) there may be no quantitative alterations of the cellular elements in the peripheral blood, and only moderate infiltration in the sternal bone marrow. Semilogarithmic scale.

Lymphatic Leukemia Without Lymphemia (Type Cohnheim).—This is the type of lymphoid disease that is usually diagnosed as "lymphosarcoma," "lymphocytoma," occasionally "follicular lymphoblastoma" (although this histology is unusual in lymphatic leukemia) and of course many times by the broad terms "lymphadenoma," "lymphoma" and "lymphoblastoma." With rare exceptions, the microscopic appearance of the lymphatic tissues is identical with that of lymphatic leukemia with lymphemia, but the blood shows either no distortions or only minor ones in the total number of white blood cells and/or differential. On close inspection, however, qualitative changes in the lymphocytes of the peripheral blood may usually be noted, these changes being identical with those seen in lymphatic leukemia with lymphemia. The importance of according recognition to this type of leukemia, aside from the theoretical implications, lies in the fact that not only may the clinical course and the longevity of the illness be predicted with reasonable certainty, but also more exact and adequate therapy can be given. In this type of leukemia it is especially important to understand that therapy should be directed toward the fundamental disease and not to the blood count, as illustrated by the preceding case (fig. 4). Because of the practical importance of this form of leukemia, several cases will be cited.

Figure 6 shows graphically the hematologic course in a typical case in which therapy is given. The patient was admitted to the University Hospital with the chief complaints of unsightly generalized enlargement of the lymph nodes and shortness of breath. The clinical onset occurred one year prior to hospitalization, at which time only dyspnea on exertion was noted. Four months before admission to the hospital he began experiencing dyspnea while at rest and complained of a dry, nonproductive cough. A chest plate, on admission

20. Forkner, C. E.: Leukemia and Allied Disorders, New York, Macmillan Company, 1938.

to the hospital, showed a large mass in the right middle and upper part of the mediastinum. The basal metabolic rate was plus 23 per cent. The blood count was substantially normal (fig. 6) except that qualitative alterations in the lymphocytes of a character commonly seen in lymphatic leukemia were noted. Biopsy of a lymph node showed the typical changes of lymphatic leukemia. Examination of a specimen from the sternal bone marrow showed 36 per cent of the marrow cells to be lymphocytes, all possessing the qualitative characteristics of the lymphocytes of lymphatic leukemia. The remainder of the laboratory data was not pertinent. High voltage roentgen therapy was given to the mass in the mediastinum as follows: November 30, to an anterior port 15 cm. in diameter, 150 r was directed; December 1, to an anterior port 15 cm. in diameter, 200 r; December 3, to

was 27 per cent of the marrow cells, as compared with a value of 58 per cent prior to this course of radiation therapy.

Figure 8 is particularly instructive in that it illustrates the extreme chronicity in some cases of lymphatic leu-

TABLE 6—Atypical Lymphatic Leukemia

[Mechanism: Lymphosarcoma Without Lymphemia]	
Diagnosis:	
1 Clinical:	No decisive points; extremely radiosensitive; often no adenopathy or splenomegaly; usually no fever or weight loss
2 Hematologic:	Blood picture—Always myelophthisic in type with hyperchromic macrocytic anemia and variable severity of thrombocytopenia and neutropenia Bone marrow—Aspiration shows variable replacement with neoplastic lymphocytes
3 Biopsy:	Variable degree of metastasis occurs

A summarization of the chief diagnostic facts in cases of lymphosarcoma when lymphemia is not apparent

kemia without lymphemia entirely comparable to the chronicity in cases of lymphatic leukemia with lymphemia previously referred to. A. S. had received high voltage roentgen therapy intermittently to control the enlargement of lymph nodes for nineteen years. The onset was at least as early as the age of 13 years, which demonstrates that this disease is not necessarily more rapid in progression in youth than in old age. The patient shows a normal peripheral blood count except for the qualitative changes in the lymphocytes that always characterize this disease. A lymph node removed at biopsy Aug. 22, 1940 revealed the typical microscopic appearance of lymphatic leukemia. An aspirated sample of sternal bone marrow reflected a mild infiltration with qualitatively altered lymphocytes (37 per cent of the marrow cells). Usually not more than 10 per cent of

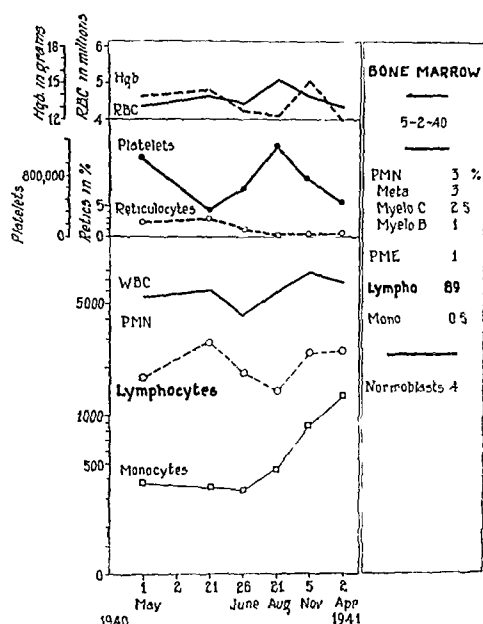


Fig 9 (K. T., a woman aged 40)—The hematologic history is shown on this chart in a case of lymphatic leukemia (Cohnheim) in which a high degree of infiltration by lymphocytes in the sternal bone marrow persists without depreciation in the peripheral blood elements. This degree of marrow infiltration usually, but as shown here not necessarily, predisposes to myelophthisic peripheral blood. The patient is also symptom free and presents only minimal adenopathy and splenomegaly. Roentgen treatment has not been necessary. The plotting is on a semilogarithmic scale.

a posterior port 15 cm. in diameter, 300 r; December 5, to a right anterior port 15 cm. in diameter, 350 r. Following this, 400 r was given to the right and left inguinal lymph nodes. Further treatment was subsequently given as shown on the chart. Following the high voltage roentgen therapy of the mediastinum, the original mass could not be visualized and all respiratory symptoms disappeared. Three weeks later the basal metabolic rate was plus 5. It is interesting to observe that no particular depression of the lymphocytes occurred in the peripheral blood, although an appreciable effect is observed on the red blood cells. Subsequent treatments with high voltage therapy show that, other than a transient anemia and mild thrombocytopenia, no adverse effects are produced in the blood, in the bone marrow or in the patient. Symptomatically, the patient each time was rehabilitated and the bone marrow reflected decreasing infiltration with lymphocytes. A typical bone marrow count is shown on the chart under date of Nov. 14, 1940, in which, after a series of radiation treatments, as indicated, the lymphocyte count in the bone marrow

TABLE 7—Second Mechanism of Production of Lymphatic Leukemia

Generalized Origin (probably not neoplastic)	
Without Lymphemia (pseudoleukemia of Cohnheim)	With Lymphemia (chronic lymphatic leukemia)
Facts in Conflict with Neoplastic Mechanism	
1 Course 3 to 25+ years	
2 Lymphocytes—morphology not neoplastic	
3 Mitosis—rare; divide by amitosis	
4 Radio-sensitivity— $\frac{1}{2}$ of lymphosarcoma	
5 Tissue culture—normal cells	
6 Micrometabolism—not neoplastic	

Diagrammatically summarized, this indicates that, when lymphatic leukemia is not the result of neoplastic changes in the lymphocyte, the fundamental alteration in the lymphoid tissues occur simultaneously throughout the body, in some instances the lymphocytes are increased in the blood, in other cases not.

the marrow cells in normal sternal bone marrow are lymphocytes, and these do not show qualitative morphologic changes. The patient continues to be in apparently perfect health and suffers the only inconvenience of occasional trips to the x-ray treatment room for reduction in size of unsightly lymph nodes.

Figure 9, which charts the course of K. T., in contrast to the preceding charts, shows advanced bone marrow infiltration with lymphocytes (89 per cent of the marrow cells), although the peripheral blood shows

no quantitative alterations, relative or absolute, of the lymphocytes contained therein. This case illustrates particularly (1) the degree of lymphocytic infiltration which may be present in the bone marrow without producing a progressive anemia, thrombocytopenia or clinical symptoms, a fact contrary to the usual experience, and (2) that, with generalized adenopathy, a lymphatic system with the characteristic changes of lymphatic leukemia (a biopsy was accomplished May 2, 1940) and a high degree of infiltration in the bone marrow, there has been no increase in numbers of lymphocytes in the peripheral blood over a period of observation of more than one year.

The diagnosis of lymphatic leukemia without lymphemia (type Cohnheim) is not difficult. Clinically the important feature is the presence of long-standing adenopathy, generalized and often massive, in a patient without complaints except possibly those due to pres-

TABLE 8.—*Atypical Lymphatic Leukemia*

[Mechanism: Chronic Lymphatic Leukemia Without Lymphemia]	
Clinical types:	
Only one type observed; clinically often confused with Hodgkin's disease; pathologically often confused with lymphosarcoma	
Diagnosis:	
1. Clinical:	
A. Generalized adenopathy, often massive, and splenomegaly with apparently good health	
B. No fever or weight loss	
C. Urticarial or patchy erythematous rash at some time in course of disease	
2. Hematologic:	
Blood picture.—Usually normal; occasional eosinophilia; close scrutiny of lymphocytes reveals qualitative changes in these cells	
Bone marrow.—Aspiration reveals variable lymphoid content; when over 25 per cent, confirmative	
3. Biopsy:	
Usually diagnostic; identical with lymphatic leukemia; occasionally histology of "follicular lymphoblastoma"	

A summarization of the chief diagnostic facts in cases of "chronic" lymphatic leukemia when lymphemia is not apparent.

sure by some particularly large mass of nodes in the mediastinum (cough and dyspnea) or on a nerve (pain).

My experience indicates that an erythematous, patchy, sometimes macular, sometimes papular and occasionally typically urticarial pruritic rash on the skin is especially common in this type of lymphatic leukemia. This type of cutaneous lesion occurs commonly also in lymphatic leukemia with lymphemia²² and is entirely unlike that seen in monocytic leukemia or Hodgkin's disease.²³ The chief points of aid in the recognition of this type of leukemia are listed in table 8.

CONCLUSIONS

1. A working hypothesis of the mechanisms responsible for the production of lymphatic leukemia includes two that are entirely dissimilar; one is neoplastic in origin, the other is neither neoplastic nor infectious in origin but possibly metabolic. Both types occur with and without lymphemia.

2. Disorder in nomenclature, failure to recognize the identity of the lymphocyte as a separate, distinct strain of cell and confusion of the diseases primarily involving the reticuloendothelial system with the diseases pri-

marily involving the lymphocyte have militated against and have largely prevented a rational approach to an understanding of the lymphocyte and lymphatic dyscrasias.

3. There is evidence that there are only two basic primary noninfectious diseases of the lymphocyte. Both are potentially and always in some phase of the disease accompanied by quantitative and/or qualitative changes in the lymphocytes in the peripheral blood, although the mechanism of production of each is different.

4. This concept of the primary diseases of the lymphocyte, entirely aside from the supporting scientific evidence described, works in clinical practice, permitting accurate diagnosis, acceptable prognosis and maximum efficiency of treatment.

5. Finally, it is suggested, as the result of ten years of research and experience in this field, that correct diagnosis of the lymphatic dyscrasias can be achieved in a maximum number of cases only by the clinician-hematologist, who must consider, in the aggregate, the clinical features, peripheral blood, bone marrow and microscopic condition of the lymphatic tissue before a decision as to diagnosis can be given. The pathologist's interpretation of the lymph node alone often does not suffice. This is applying to the lymph node diseases a principle that has been established as valid through experience in the remainder of the blood dyscrasias.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. BETHELL AND WISEMAN

DR. RUSSELL L. HADEN, Cleveland: No disease puzzles me more or presents a more bizarre clinical picture than leukemia. It is a complex problem. The patient with unexplained fever and unexplained anemia must always have leukemia considered as a possible cause of his disease. Even after the diagnosis of leukemia has been correctly made, it often is impossible to be sure about the type. Dr. Bethell, after further study, has had to revise the original diagnosis in 10 per cent of the cases. The frequency of leukemia without leukocytosis should be emphasized. Dr. Bethell calls this the subleukemic form and Dr. Wiseman the atypical form of leukemia. Dr. Bethell told me this morning that 20 per cent of his series of patients are subleukemic. About 25 per cent of our patients with leukemia of all types never show a leukocytosis. The leukemia may be just as malignant with 2,000 as with 200,000 cells. My associates and I have been helped greatly in making the diagnosis of leukemia in the absence of leukocytosis by a careful study of concentrated preparations of the white cells. Dr. Bethell has emphasized the great variety of symptoms encountered in leukemia. The patient may have almost any symptoms since the disease is so widespread, although fever and anemia are by far the most common. Only 10 per cent of Dr. Bethell's group of patients with acute lymphoblastic leukemia had any enlargement of the spleen and lymph glands. The outlook for treatment in acute lymphoblastic and the lymphosarcoma cell types of leukemia is very poor. Perhaps the patients are much better off if nothing is attempted. I am impressed with the important place of arsenic in the treatment of chronic leukemia. I prefer to use it in combination with iodine. Many patients with chronic lymphatic leukemia judiciously treated with irradiation and arsenic will get along exceedingly satisfactorily often for years.

DR. SHIELDS WARREN, Boston: In the discussion of leukemia this morning, one thing has stood out more than anything else: our relative ignorance of the disease in spite of all the attention that has been focused on it. As brought out by Drs. Bethell and Wiseman, I believe this ignorance has been due partly to a one-sided type of study. I am glad to hear them emphasize the need for consideration not only of the blood findings but of the clinical findings, also taking into consideration the micro-

22. Gates, Olive: Cutaneous Tumors in Leukemia and Lymphoma, Arch. Dermat. & Syph. 37: 1015 (June) 1938.

23. Mercer, S. T.: Dermatoses of Monocytic Leukemia, Arch. Derm. & Syph. 31: 615 (May) 1935.

scopic appearance of the lymph nodes and in the bone marrow as shown by biopsy. As a pathologist who has studied cases of chronic lymphatic leukemia at autopsy I cannot entirely agree with Dr. Wiseman in considering it as not a neoplastic disease. The extent of infiltration of the various viscera in the cases which do come to autopsy make me feel that until we have strong evidence to the contrary it is best retained in the neoplastic group.

DR. RAPHAEL ISAACS, Chicago: I was aware of the fact that the subject of leukemia is complicated, but I see it is even more complicated than I thought. The present concept of lymphatic leukemia may be simplified if we consider that there are really three conditions. One is a hyperplasia, or overgrowth of cells of the lymph glands. The second is an overgrowth of cells of the spleen. The third is a neoplastic condition which we may call lymphosarcoma. The cells of the lymph glands have round nuclei. The cells of the spleen have oval or kidney shaped nuclei. In other words, the spleen is not a lymph gland. So we have two kinds of lymphatic leukemias so called, one in which there is an overgrowth of lymphocytes and one in which there is an overgrowth of cells in the spleen. There may be lymphocytes invading the spleen or there may be spleen cells invading the lymph glands, but they are two different diseases, and I think the outlook in the two is quite different. At present I agree with Dr. Wiseman that there is a possibility that the lymphatic leukemia is hyperplasia of lymphoid tissue and that lymphosarcoma is a neoplastic condition. Some conditions appear to be converted into the neoplastic type by roentgen treatment. In fact, most of the patients with lymphosarcoma who became leukemic received roentgen treatment before they became leukemic. A therapy which we found helpful was that if the patients eat about half a pound of liver every day their red blood cell count and hemoglobin content remain nearer normal for a longer period of time than otherwise. Liver extract will not have this effect, but there is something in whole liver which influences the red blood cell count and hemoglobin in chronic lymphatic leukemia.

DR. B. K. WISEMAN, Columbus, Ohio: I don't think it possible at present to convince every one that there are two fundamental types of leukemia, one neoplastic and one non-neoplastic. As in the case of pernicious anemia, this will probably require the added evidence of therapeutic control. When I first started in this field, I also thought that all types of leukemia were neoplastic and I think I was unduly swayed in my judgment because of the animal types of leukemia—laboratory leukemia. After careful study of this disease, taking into consideration the clinical course, the morphologic aspects of the cells involved, the type of pathologic change that occurs in the lymph nodes with certain laboratory indications, such as the micro-metabolism and tissue culture characteristics of these cells, it became evident to me that the so-called chronic type of lymphatic leukemia did not seem to possess many of the recognized traits of neoplasms in general. I think the leukemia of the laboratory animals is represented in the human field by the acute lymphatic type which does show neoplastic traits. This is also termed "lymphosarcoma cell leukemia" or "leukosarcoma." I think this concept makes quite clear any lack of conflict between the established facts of animal leukemia and those of human leukemia. I don't think "chronic" lymphatic leukemia is ever found in laboratory animals. Dr. Warren, of course, has all the data I presented in my written paper in support of the non-neoplastic hypothesis of chronic lymphatic leukemia. Time does not permit a satisfactory rebuttal based on factual evidence, but I listed these facts on the lantern slides although I didn't have time to emphasize them. Necessarily, I must be content to rest my case on the basis of the merits of the material developed in the written manuscript. With reference to Dr. Isaacs' remarks, I would say that I have not seen a chronic type of lymphatic leukemia which terminated in the lymphosarcoma type of leukemia. Assuming no inaccuracies in identification of cell types I would interpret this phenomenon as a coincidental occurrence of two separate disease states in the same individual. This would necessarily be an extremely rare occurrence.

CLINICAL VALUE OF THE ASCHHEIM-ZONDEK TEST IN THE DIAGNOSIS OF TESTICULAR TUMORS

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Since 1931 quantitative Aschheim-Zondek tests have been done routinely on patients with testicular tumors at Memorial Hospital. There have been 203 such patients, on whom a total of 1,403 urinary assays have been recorded. The tests were performed by the technic described by Ferguson in 1933. In addition there have been 42 on whom tests have been done with a larger number of animals per test in an attempt to make the assays more accurate. We wish to analyze data on these patients to answer the following questions:

1. Is the amount of hormone in the urine of a patient with a testicular tumor related to the histologic structure of the tumor?
2. Can one accurately follow the clinical course of the disease by repeated Aschheim-Zondek tests? Do these tests show increasing excretion of hormone, for instance, as evidence of recurrence or metastasis before such conditions can be discovered clinically?
3. Is the Aschheim-Zondek test as originally performed by us accurate, and if not why not?
4. Has the test any prognostic value in cases of testicular tumors?
5. Finally, is the test of sufficient clinical value to be worth doing? If it is, how should it be done?

Historically, the appearance of gonadotropic hormone in the urine of a man with teratoma testis was first observed by Zondek in 1929¹ and reported, with a subsequent case, in March 1930. In September 1930 Heidrich, Fels and Mathias² published a detailed study of a case of chorioepithelioma of the testis, with data on the hormone in the urine. Ferguson's³ first paper, based on a study of 12 cases, appeared in April 1931. The observation was made that irradiation caused a fall in the hormone output. In June 1933 Ferguson published a more extensive article,⁴ reporting on a series of 117 consecutive testicular tumors studied by quantitative tests for gonadotropic hormone. From this material he came to the conclusion, reiterated several times in other articles,⁵ that the histologic type of the tumor could be predicted by the amount of hormone excreted in the urine. For choriocarcinoma, 40,000 or more mouse units of prolactin A per liter was given as characteristic; for embryonal adenocarcinoma, 10,000 to 40,000 mouse

From the Urological Service and the Oncological Laboratory of Memorial Hospital.

Read before the Section on Urology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

1. Zondek, B.: Ueber die Hormone des Hypophysenvorderlappens: III. Follikelreifungshormon (Prolan A) und Tumoren, Klin. Wchnschr. 9: 679-682, 1930.

2. Heidrich, L.; Fels, E., and Mathias, E.: Testikuläres Chorionepitheliom mit Gynäkomatose und mit einigen Schwangerschaftserscheinungen. Gleichzeitig ein Beitrag zur Pathologie der hormonalaktiven Gewächse, Beitr. z. klin. Chir. 150: 349-384, 1930.

3. Ferguson, R. S.; Downes, H. R.; Ellis, E., and Nicholson, M. E.: Preliminary Note on a New Method of Differentiating the Testicular Tumors by Biological Means, Am. J. Cancer 15: 835-843, 1931.

4. Ferguson, R. S.: Quantitative Behavior of Prolan A in Teratoma Testis, Am. J. Cancer 18: 269-295, 1933.

5. Ferguson, R. S.: Studies in the Diagnosis and Treatment of Teratoma Testis, Am. J. Roentgenol. 31: 356-365, 1934.

units; for embryonal carcinoma with lymphoid stroma, 2,000 to 10,000 units; for seminoma, 400 to 2,000 units, and for adult teratoma, 50 to 500 units.^{5a} The statement that "the limits reached by each type of tumor overlap so little that it is possible to make the diagnosis on the basis of this determination alone" is found in an article published by Ferguson in March 1934.⁶

We have examined data in our files on 203 patients on whom satisfactory quantitative Aschheim-Zondek tests have been done to determine whether the foregoing statement is correct. For this purpose we limited ourselves to patients who had either an untreated primary tumor at the time of the first test or active untreated metastatic disease. Only 14 had tests of the urine done when a primary untreated testicular tumor was present and subsequently showed classifiable tumor tissue either on orchiectomy or biopsy of a metastasis or at autopsy. Thirty-six had urinary assays after the primary testicular tumor had been treated by irradiation or orchiectomy, with active untreated metastatic disease present when the assays were made.

For these reasons, therefore, only 50 patients of the 203 provided a suitable basis for answering the first question, regarding the correlation between the amount of hormone in the urine and the histologic structure of the tumor. The remaining patients fell into various classifications. For instance, some never showed any positive evidence of active disease while in this hospital, having come here for prophylactic irradiation. Others had been treated successfully here many years before the test was used and have remained clinically cured. Still others were given radiation therapy before a sample of urine was collected. Some refused orchiectomy, and no pathologic specimen was obtained. Some showed such complete destruction of the tumor by irradiation that no pathologic classification could be made.

Of the 50 tumors found suitable, 2 were adult teratoma, 3 were adult teratoma with areas of embryonal carcinoma, 4 were embryonal carcinoma, 20 were embryonal carcinoma with lymphoid stroma, 14 were embryonal adenocarcinoma and 7 were partially or completely choriocarcinoma. The last 7 may be further divided into 2 which were choriocarcinoma throughout, 2 which were embryonal adenocarcinoma with areas of choriocarcinoma and 3 which had areas said to be suggestive of choriocarcinoma. This classification appears in figure 1, in which it is also shown that the 2 patients in whom the tumor had strictly adult features excreted 0 to 500 mouse units per liter of urine. This was true also of 1 of the 3 patients in whom the tumor was adult and contained areas of embryonal carcinoma. The other 2 excreted 1,000 to 2,000 units per liter.

In the 4 cases of embryonal carcinoma there was no uniformity of hormone excretion, the amount ranging from 0 to 10,000 mouse units. The same lack of uniformity in hormone output was shown in the 20 cases of embryonal carcinoma with lymphoid stroma and in the 14 cases of embryonal adenocarcinoma. In general the more widespread the tumor the higher the hormone output; but this principle is not of much clinical use, because of frequent exceptions. For instance, there

were 2 cases of embryonal carcinoma with lymphoid stroma and 3 of embryonal adenocarcinoma with extensive untreated metastatic disease in which only 100 to 500 mouse units was excreted per liter of urine.

In the 7 cases of either frank choriocarcinoma or areas suggesting it the excretion rate was high.

In the 50 suitable cases we made no attempt to reevaluate the laboratory tests but merely used the figures as they had been placed on the charts. From the foregoing discussion it can be seen that there is no close relation in this material between histologic type and rate of hormone excretion. In general, however, when

HISTOLOGIC TYPE	NUMBER OF CASES	PROLAN-A (MOUSE UNITS PER LITER)	EXTENT OF DISEASE		
			LOCALIZED TO TESTICLE	MODERATE- LY ADVANCED	ADVANCED
1. A ADULT TERATOMA	5	2	0-500	••	
B ADULT TERATOMA WITH ISOLATED AREAS OF EMBRYONAL CARCINOMA	1	1	200	•	
	2	2	1000-2000	••	
2. EMBRYONAL CARCINOMA (SOLID OR DIFFUSE) (SO-CALLED "SEMINOMA")	4	1	0		•
	1	1	100-500		•
	1	1	5000		•
	1	1	10000		•
3. EMBRYONAL "CARCINOMA WITH LYMPHOID STROMA" (ALSO (SO-CALLED "SEMINOMA")	20	5	0-100	•	••••
	5	5	200-500	•	••
	3	3	1000-1500		••
	6	6	2000-2500	•	•••••
	1	1	10,000+		•
4. EMBRYONAL ADENO- CARCINOMA	14	1	0	•	
	5	5	100-500	•	•••
	5	5	1000-2500		••••
	3	3	10,000		•••
5. A CHORIOCARCINOMA	7	4	10,000+		••••
B EMBRYONAL CARCINOMA WITH AREAS SUGGESTING CHORIOCARCINOMA	2	2	1000-2000	•	•
	1	1	10,000		•

Fig. 1.—Data on 50 cases of teratoma testis in which quantitative Aschheim-Zondek tests were done on the urine when active untreated disease was present. The amount of hormone excreted and the clinical extent of the disease are shown.

the tumor is of one of the less malignant adult types the excretion level tends to be low, while the choriocarcinoma causes the highest levels.

As mentioned previously, 42 cases have been studied in a more intensive fashion, with more mice per level than were used in the earlier tests. Of these 42, 19 are suitable for analysis. The remaining 23 are made up of 8 in which there were nonmalignant testicular swellings, 2 in which pathologic examination was not done, 8 in which there was no evidence of active disease at the time of the first test or subsequently and 5 in which the pathologic reports were unsatisfactory (because of destruction of the tumor or some other reason).

Among the 19 patients were 2 with choriocarcinoma. One of these excreted 200,000 mouse units per liter of

5a. By prolan A is meant a gonadotropin hormone which causes follicle ripening. No distinction was made between hormones of pituitary and those of placental origin.

6. Ferguson, R. S.: Clinical Evaluation of the Quantitative Excretion of Prolan A in Teratoma Testis, J. Urol. 31: 397-409, 1934.

urine, and the other only 100 to 150. Among 11 with embryonal adenocarcinoma 1 excreted 64,000 mouse units per liter; 1, 40,000; 1, 5,000; 4, 2,000; 1, 400, and 3, 100 or less. All these patients had extensive metastases except the man excreting 40,000 units and the 1 excreting 400 units per liter. The first patient had a tumor in a testicle only. The second had a few metastases.

Among 5 patients with embryonal carcinoma with lymphoid stroma or seminoma there was 1 who excreted 20,000 units, 1 who excreted 1,000 and 3 who excreted less than 200 units. All 5 had fairly extensive metastases.

One patient with myosarcoma with metastasis excreted 400 units per liter.

In answer to question 1, then, our experience is that there is no definite correlation between hormone level and histologic appearance of the tumor. One cannot make the diagnosis seminoma, embryonal adenocarcinoma or even choriocarcinoma from data on the hormone excretion alone.

This is hardly surprising when one considers the histologic complexity of many of these tumors. Tumors classified as embryonal adenocarcinoma may show areas of complex teratoma, with various types of tissue, derived from other germ layers, present. Ferguson⁷ himself, after study of 80 testicular tumors by large serial sections through the entire tumor, concluded:

The malignant tumors of the testis are the result of neoplastic growth of the germ cell, and because this cell under certain circumstances (age, location, hormonal condition of the host) may exhibit but one or all of its potencies, these tumors are in a strict sense, teratoid in origin.

He mentioned a specimen in which chorioepithelioma, embryonal adenocarcinoma and seminoma were found in adjacent areas.

The tumor of the patient with embryonal carcinoma with lymphoid stroma in our last series who excreted 20,000 units per liter was typical in the first slide examined but in another area showed epithelial-lined cysts. Since most of the diagnoses used in answering our first question were made from small blocks of tumor, it is easily understandable that more complete examination of the entire tumor or of the metastases, were this possible, might give a different impression.

Can one follow the clinical course of the disease by repeated Aschheim-Zondek tests and predict metastases before they are clinically evident?

In answering this question we have relied chiefly on the 203 cases originally studied. Of the 203, 48 were not suitable, either because not enough information as to the clinical course was available or because only one assay was done.

In 74 cases no test yielded a level above 500 mouse units per liter; these cases are not considered, because consistently low levels cannot be used to affirm or deny the supposition that the excretion level follows the clinical course of the disease.⁸

In 47 cases there seemed to be close correlation between hormone levels and clinical course. In many of these there were consistently high levels of hormone which corresponded with clinical progress to a fatal outcome. In others a fall of hormone output appeared with intensive treatment and a rise with the appearance of metastasis.

In 34 cases, on the other hand, either rising hormone levels were not associated with progress of the disease or falling levels accompanied progressive cancer. Possibly the former occurrence may be explained by an increase in the excretion of pituitary gonadotropic hormone known to follow castration.

Obviously, a test which in only 47 of 155 serial determinations shows close correspondence with the condition of the patient is of little clinical value. Is it possible to find any reasons for this failure of correlation? It would seem reasonable to suppose that when a tumor produces a measurable amount of hormone increased growth will be accompanied by increased hormone output, and vice versa. That this was true in some of the 47 cases suggests that the exceptions must have an easy explanation.

In the technic devised and advocated by Ferguson and used in this laboratory until three years ago, 6 mice were used for each test. Five injections of a different amount of fresh morning urine or varying quantities of a 5X alcoholic concentrate of this urine were given each mouse in two days. That is, only 1 mouse was used to determine the response at each of six different levels. When the animals were killed one hundred hours after the first injection, the final values were obtained by considering the formation of follicles in the ovaries as constituting a positive reaction. Thus if the mouse which received five injections of 0.2 cc. (1 cc.) of fresh urine showed follicle formation, it would be recorded that 1 mouse unit of hormone was present in 1 cc. of urine, or 1,000 units in a liter. If corpora lutea appeared, Ferguson multiplied by five the values obtained by the foregoing method, since Zondek had shown that it took approximately five times the amount of the urine of pregnancy to cause the formation of corpora lutea that it did to produce the ripening of follicles.

This method contains at least four sources of error:

1. Laboratory animals are so variable in their reactions to biologic products that to rely on only 1 animal per level is hazardous. This is shown by a study of the 42 cases in which 5 mice were used for each similar quantity of urine injected. In these cases, 430 tests were made on 2,150 mice. Of the 430 tests, 118 revealed the formation of corpora lutea or corpora haemorrhagica in the ovaries of at least 1 of the 5 mice. In other words, gonadotropic hormone appeared to be present. Yet in only 43 of these 118 tests were positive results obtained on all 5 mice. In 26 tests 4 of 5 mice showed corpora lutea; in 14, 3 of 5; in 18, 2 of 5, and in 17, 1 of 5; yet it is obvious that hormone must have been present to cause the formation of corpora lutea in even the last group.

2. To use a first morning specimen and calculate amounts of hormone per liter introduces variable factors such as the efficiency of the patient's kidneys and bladder and the amount of fluid he consumed the previous evening. A man with a daily output of 3,000 cc. of urine will not show the same amount of hormone per liter as one putting out exactly the same total quantity in 1,000 cc. A patient whom we studied carefully with serial daily hormone determinations suddenly increased his output of urine from 1 liter to 5 while under observation, explaining when questioned that he thought it was "a good thing to drink plenty of water." Only twenty-four hour collections are rational in such a metabolic study and, as a matter of fact, well preserved three day collections would probably give even more accurate results.

7. Ferguson, R. S.: Teratoma Testis: Pathogenesis of the Malignant Tumors of the Testis, Preliminary Note, Cancer Probl., Symposium, 1937, pp. 86-91.

8. Variations from 100 to 500 units probably are meaningless with the technic that was used.

3. To make a 5 \times concentration of urine by precipitation with 95 per cent ethyl alcohol is to invite error. Alcoholic precipitation appears to be among the most satisfactory procedures for concentrating and recovering gonadotropic hormone, but the amount so recovered is highly variable. We have had the experience of finding no hormone in an alcoholic extract of a specimen of urine which showed appreciable amounts when unconcentrated. By the statement that this process invites error we do not mean to deny the value of concentrating urine by alcoholic precipitation but wish to point out the fallacy of supposing that such a procedure gives 100 per cent recovery of hormone.

4. To take as an end point the formation of follicles in the ovary and to assume that five times the amount of hormone which causes this result will produce corpora lutea is wrong. At least two gonadotropic hormones now are known to occur in urine. These are the follicle-stimulating hormone from the pituitary, found in

one or two of the many follicles present show development. It is necessary, then, to record values in levels of chorionic gonadotropic hormone and follicle-stimulating hormone separately and to control one's observations by microscopic section of the ovaries of the experimental animals.

If we have shown that the quantitative Aschheim-Zondek test as it can be carried out practically has little value in disclosing the type of the testicular tumor or in accurately following the clinical course of the disease, is it of any clinical value? We believe that this question should be answered in the affirmative, because our records show that the appearance of chorionic gonadotropic hormone is a bad prognostic sign. Of the original 203 patients with testicular tumor studied, those who showed a hormone level which never went above 1,000 mouse units per liter had a mortality of 33 per cent. This means that, of all patients tested from 1931 to 1939, 77 per cent were alive in July 1939.

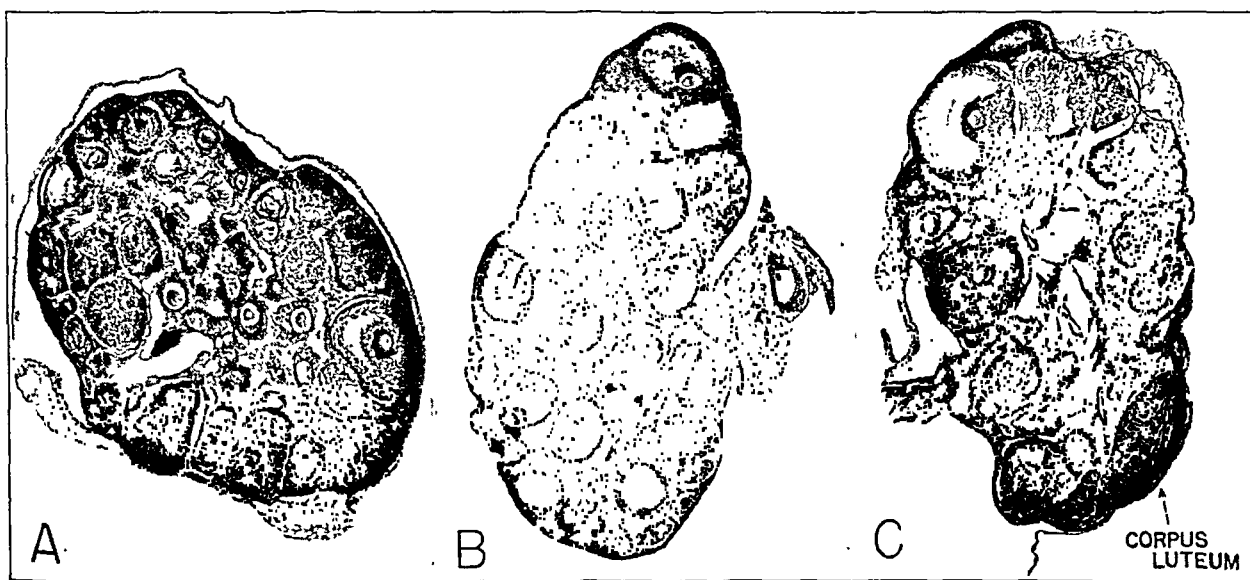


Fig. 2.—*A*, ovary of a mouse inoculated with urine from a patient showing no gonadotropic hormone. *B*, ovary of a mouse inoculated with urine from a castrate. Note that nearly all follicles show ripening but no corpora lutea are present. This effect is due to the presence of follicle-stimulating hormones, probably from the anterior lobe of the pituitary gland. *C*, ovary of a mouse inoculated with urine from a patient with active teratoma testis. Note that there is only one ripe follicle at the top of the section but a corpus luteum at the bottom. This effect is due to the presence of chorionic gonadotropic hormone.

large amounts in the urine of male and female castrates and of women past the menopause, and the chorionic gonadotropic hormone of the urine of pregnancy (fig. 2). The latter causes luteinization of follicles already formed, and in the hypophysectomized rat the effect is one of luteinization of interstitial cells. The action of the follicle-stimulating hormone is primarily the formation of follicles. Both hormones are found in the urine of patients with teratoma; occasionally they may be present together, but it is likely that one may predominate over the other. A patient studied by us repeatedly had positive reactions at 1,000 to 2,000 mouse units per liter though clinically free of disease. Microscopic study of the assay mouse ovaries showed ripening of all visible follicles, with either no corpus luteum or only an occasional one. The positive reaction was a castration effect. On the other hand, specimens of urine may give rise to many corpora lutea and few ripe follicles. Diluting such urine does not result in the picture of profuse maturation of follicles described but rather produces a condition of the ovary in which only

If a patient excreted 1,000 to 2,000 mouse units of hormone per liter he belonged to a group of which 57 per cent were dead on that date. Those excreting 2,500 mouse units or more per liter showed an 82 per cent mortality.

Thirty patients were recorded as excreting 10,000 mouse units or more per liter. All who showed this amount on more than one occasion are dead.

Of the 42 patients studied more carefully for level of excretion and type of hormone, the urine of 18 in some dilution gave rise to corpora lutea of the pregnancy type in the ovaries of the test animals. Of the 18, 14 died in less than three years, while 1 is still living but has extensive metastatic disease. The 3 patients apparently cured are 1 whose highest output was 200 mouse units per day of what appeared to be chorionic gonadotropic hormone, a second whose urine showed in a single test 10,000 mouse units of this type of hormone until removal of the tumor, after which it showed only small amounts of follicle-stimulating hormone, and a third with metastatic seminoma, whose urine never

produced corpora lutea but did produce follicle ripening, suggesting the presence of chorionic gonadotropic hormone, excreted in amounts of 100 units every twenty-four hours.

Of 16 patients whose urine showed small amounts of what appeared to be follicle-stimulating hormone or no hormone at all, 13 are living and apparently free of disease, while 3 have died. We have been unable to confirm the suggestion of Hamburger⁹ that follicle-stimulating hormone is found in the urine of patients with seminoma (for him a term including embryonal carcinoma and embryonal carcinoma with lymphoid stroma) and chorionic gonadotropic hormone in that of patients with adenocarcinoma or chorioma. Both types of hormone are found in each group of patients, we believe.

Finally, from the clinical point of view is the Aschheim-Zondek test worth doing in all cases, and if so how should it be done? We believe that the test is valuable, since positive results are of grave prognostic value and not infrequently constitute the only evidence of disease. An example of this is a recent case in which the diagnosis originally was tuberculous epididymitis on the left. Two tests were done on the urine before any treatment was begun, and each revealed a considerable quantity of chorionic gonadotropic hormone. On the basis of these tests a diagnosis of teratoma testis was made, and it proved to be correct on orchiectomy. After operation and roentgen therapy the test continued to give positive results, though there was no clinical or roentgenologic evidence of disease. Eleven months after operation, there being increasing excretion of hormone in the urine, metastatic disease in the mediastinum was finally found by roentgenogram.

We believe that the test can be satisfactorily performed in the following manner: A twenty-four hour collection of urine should be assayed on 6 mice as recommended by Ferguson. If any react positively, quantitative determinations should be performed. At least 5 mice should be used for each assay level and the ovaries of all animals should be studied histologically. Uniform ripening of follicles, suggesting the pituitary type of hormone (follicle-stimulating hormone) seems to be of little prognostic significance. The formation of corpora lutea, especially of the chorionic hormone type, is important. A negative reaction is of little clinical significance because considerable disease may be present. A strongly positive reaction of the chorionic type is highly important because, according to our experience, it signifies active disease and usually a fatal prognosis.

SUMMARY

1. A study of 203 cases of testicular tumor in which quantitative Aschheim-Zondek tests were done by the method of Ferguson and a study of 42 cases in greater detail, with a larger number of mice per assay level, revealed little correlation between the amount of gonadotropic hormone found in the urine and the histologic type of the tumor.

2. In only 47 of 155 cases in the series followed by serial tests done by Ferguson's technic was there any close correlation between the hormone level and the clinical course of the disease.

3. The failures in correlation may be ascribed to the inadequacy of the test as originally described.

4. The presence of chorionic gonadotropic hormone in the urine means that there is an active tumor somewhere in the patient and suggests a bad prognosis. Eighty-two per cent of the patients whose urine showed 2,500 or more mouse units per liter are dead. All patients who excreted 10,000 mouse units per liter more than once are dead. In the test as used, "10,000 mouse units" indicates the presence of chorionic gonadotropic hormone.

5. By suggestions given for doing the quantitative Aschheim-Zondek test, a number of errors in the former technic may be corrected.

York Avenue at Sixty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH H. KIEFER, Chicago: We do not see nearly so large a number of cases in Dr. McKenna's service at the Research and Educational Hospitals of the University of Illinois, but in the last four years we have determined the gonadotropic hormone output in every one. The Zondek alcohol precipitation method has been used routinely. This gives a set of values which differs considerably from that obtained when unaltered urine is used. In some cases, in which we made parallel determinations with both extract and unaltered urine, a ratio of approximately 3 to 1 was found to exist. Some of the earlier reports proposed that one could determine the type of tumor present by the titer of the hormone output. Also it was said that one could determine the presence of metastases with assurance and regulate roentgen therapy accordingly. Some authors even proposed a classification of these tumors in which the primary standard of division would be hormone output, and the secondary divisions into subgroups would be made according to the histologic picture. A few reports have appeared since in which the value of this method has been denied. We have found that routine use of this test has been useful in diagnosis. We have found no positives in nonmalignant lesions. Several of these cases were so suggestive as to warrant surgery despite the negative hormone output. In every case the lesion has proved to be nonmalignant. We have so far had no case of tumor in which a preoperative determination was negative. We have not been able to correlate the histologic type and hormone output in any more than a very inexact way. Likewise extent of metastasis did not give a corresponding increase in hormone output. Some patients with extensive demonstrable metastases showed only minimal hormone outputs. Some others, apparently well after orchiectomy and roentgen therapy, continued to show these same low values for years (possibly a castration effect). Hormone determination is a valuable aid to diagnosis and, with definite restrictions, in prognosis. Possibly with further knowledge as to the exact nature of the hormone formed, tests of this nature will take on added value. In many cases gonadotropic hormone may be only one of several hormones elaborated by these growths. If these totipotent cells can elaborate gonadotropic hormone, why not estrogens and others? How else can one explain gynecomastia with colostrum formation? Some investigators have found estrogen excretion in these cases.

DR. J. B. GILBERT, Schenectady, N. Y.: It is important to remember that frequently the original technic is the best, and modifications often increase the difficulties of its proper application. This test must be done in great detail, which allows no short cuts. This detailed and expensive work is often possible only in research institutions. From the practical standpoint in the vast majority of patients as seen by urologists in smaller hospitals the procuring of exact quantitative tests is frequently impracticable or often actually impossible. The test as used in most hospitals is poorly standardized, as some use mice, others rats, and many rely on a single intravenous rabbit injection. A summary of the results and the true importance of such tests is almost impossible to determine by reference to the collected urologic literature. The correlation between hormone levels and pathologic type is extremely difficult because of possible errors in both the microscopic examination of tissue and the aforementioned errors in endocrine methods. Confusion in this

9. Hamburger, C.; Bang, F., and Nielsen, J.: Studies on Gonadotropic Hormones in Cases of Testicular Tumors: Attempt at Classification of Testicular Tumors on the Basis of Their Hormonal, Histological, and Clinic-Radiological Properties, *Acta path. et microbiol. Scandinav.* 13: 75-102, 1936.

subject has been caused by misdefinition and inexact terminology. This confusion arose in Aschheim-Zondek's original description of reactions I, II and III and was later increased by the use of the terms "prolan A and B." The fact that the origin of the so-called prolans is not known for certainty makes an exact definition difficult, if not impossible. The authors' use of the term "chorionic gonadotropic hormone" is useful and should be followed by others. The fact that the finding of such a hormone, with corpus luteum formation in the ovaries, indicates a bad prognosis is extremely important. This was found to hold true in our study of personal and collected cases in which testis tumors were associated with gynecomastia, also in another series of small obscure primary testis tumors in which hormone assays aided in the early diagnosis and prognosis in 21 of 53 cases. The clinical course when based on histologic grading has been inexact, and only to a moderate degree have the hormonal tests clarified this situation. The authors do point out, however, that a roughly useful working guide to prognosis and therapy can be obtained; also that at least positive findings are important and may constitute the only evidence of disease. Together with the aid of these tests and the expert knowledge gained from treatment of many patients, the survival rate in their hands at the Memorial Hospital is unusually large. A 14 per cent survival in inoperable testis cancer treated under these conditions is proof of their careful and intelligent clinical management and valuable aid received from the laboratory.

Dr. GRAYSON CARROLL, St. Louis: The authors speak of orchiectomy. Do they attempt to remove the retroperitoneal lymph glands in their operative procedure or have they abandoned that? I am aware that in most of the textbooks it indicates that that should be done whenever possible.

Dr. GRAY H. TWOMBLY, New York: Dr. Kiefer's report differs from ours in that he seemed to find positive hormone tests in all his cases. I could mention a dozen cases in our clinic in which there was a testicular tumor present, but no hormone. I wonder whether he made any study of what type of hormone was present. It is possible the tumor itself growing in the testis and destroying it may influence the pituitary to secrete the castrate type of hormone. Our experience is that only a positive test is of diagnostic value and a negative test means nothing. I have seen a case in which the lungs were filled with metastases that had an absolutely negative test as far as we could determine. He said something about estrogens in these cases. We ran estrogenic determinations on one man who had a chorioepithelioma of the testis with gynecomastia. He had a titer which was about twice as high as that of the normal female and, of course, a great deal higher than that of the normal man. But I don't believe that much estrogen is excreted in most cases of teratoma testis. Dr. Gilbert was complimentary about our handling of these tumors. I didn't quite like his saying he felt that the test was not practical. I feel that the study we have made really makes the test more practical than it was before, because it appears that repeated tests to try to follow the course of the disease are not worth while doing in most cases but that the test in which we try to find out whether the patient is excreting chorionic gonadotropic hormone or not is tremendously worth while. All the people that really excreted it in large amounts died of the disease. He brought out the variability in microscopic appearance of teratoma. There can be a choriomatous tissue in one part of the tumor, seminoma in another part, adult type of tumor in another part, embryonal adenocarcinoma in another part. In answer to Dr. Carroll's question it has been the policy at Memorial Hospital to do the orchiectomy only after the roentgen therapy. However, it seems to me that, if one exposes the cord and ligates it carefully, one cuts off all the lymphatics. There isn't any possibility of spread taking place up the cord while one is manipulating the testis, if one has already cut the lymphatic channels. Then the tumor can be lifted out of the scrotum, giving a gross specimen that one can really study properly in the laboratory, both pathologically and from the hormone point of view. It has been the feeling of the men in the urologic department that wide dissection of the nodes in the iliac region, as Dr. Hinman does, is a procedure that does not give a high enough cure rate to justify the risk to the patient in that procedure. The routine treatment has been to treat the testis and then the iliac and epigastric regions with large amounts of roentgen ray.

THE TECHNIC OF BRONCHOGRAPHY AND A SYSTEM OF BRONCHIAL NOMENCLATURE

RALPH ADAMS, M.D.

AND

LOWREY F. DAVENPORT, M.D.

BOSTON

As refinements in the technic of pulmonary resection have lowered mortality and morbidity rates, the medical profession and the group of patients symptomatically concerned have become increasingly interested in the possibility of relief from cough or sputum and the number of cases requiring critical evaluation has risen sharply.

Bronchography, as roentgen demonstration of the bronchial pattern by opaque mediums is called, is an essential diagnostic aid in the investigation of many such patients, and the use of the procedure has become widespread during recent years. Commendable as is the enthusiastic study of patients with a cough by all measures likely to discover its cause, the general use of iodized oil injection has raised certain problems. Numerous patients have been seen in consultation in whom a diagnosis of bronchiectasis has been established elsewhere by demonstrating iodized oil filling one or more grossly dilated bronchi in one or more lower lobes. The filling is adequate for substantiating a diagnosis of bronchiectasis but inadequate for a basis on which to plan a surgical program, and the patient must be requested to undergo another injection. Oftentimes objections are encountered because the initial procedure is recalled as a nightmare, attended by violent coughing, nausea, vomiting, excitement and general confusion. Patients sometimes also are inquisitive as to why the original injection was not done in such a manner as to give the information required.

We have done several hundred iodized oil injections in the past seven years by various methods¹ and have developed a simple, proved technic which is almost uniformly successful and is suitable for use by any physician willing to learn a few principles and respect scrupulously the details of application. The time has come when an accurate, complete, intelligently made bronchogram can reasonably be expected of any one who undertakes the procedure. No longer is it sufficient to succeed in getting a few drops of iodized oil into some part of the tracheobronchial tree; on the contrary, every bronchial segment should be visualized in order that the extent of the disease may be established and a proper plan of therapy instituted. Especially is this important if surgery is indicated, because decision concerning the amount of lung tissue to be resected must rest largely on the bronchogram.

TECHNIC

The technic requires simple materials, and no special equipment is needed. Adequate facilities for making good x-ray films of the chest are assumed. The materials required are:

(a) Two chairs, a small work table, an adjustable electric light and a flat-top table.

From the Thoracic Clinic of the Massachusetts General Hospital.
Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.
1. Goldman, Alfred, and Adams, Ralph: Endobronchial Probing Combined with Serial Selective Bronchography Fluoroscopically Controlled, *Ann. Surg.* 106:976 (Dec.) 1937.

(b) A head mirror, a laryngeal mirror, an atomizer, 6 inch cross forceps, small cotton or gauze pledgets, a 2 cc syringe and curved applicator, an ordinary number 16 urethral catheter and stylet and a 20 cc syringe (fig. 1).

(c) A 5 cc. measuring flask, two 5 cc. glass containers, 4 per cent cocaine, 5 per cent larocaine and 20 cc. of iodized oil.

PRELIMINARIES AND ANESTHESIA

Preoperative medication is not essential but is beneficial in achieving abolition of cough, a suppression of mucous membrane secretions and proper introduction of oil. A small dose of pentobarbital one hour beforehand helps allay nervousness and acts as a specific prophylactic antidote to cocaine hypersensitivity. In our hands the preliminary medication with pentobarbital has prevented severe cocaine reactions. These most often occur in apprehensive persons of the sympatheticotonic type. The initial reaction is largely due to the vasomotor effect and can be promptly relieved by the inhalation of amyl nitrite. A dose of morphine

A sitting position should be used for the induction of local anesthesia to the throat and tracheobronchial tree. The physician should sit opposite with the small work table and materials at his right and a light behind the patient's shoulder. Good anesthesia is prerequisite to good bronchography. This statement cannot be over-emphasized, and it can be stated with almost equal truth that poor bronchography is due mainly to poor anesthesia. A large quantity of anesthetic is not desirable and, in fact, is contraindicated. Proper topical application of 10 cc. of 4 per cent cocaine hydrochloride solution or 5 cc. of 4 per cent cocaine and 5 cc. of larocaine gives an excellent preparation with abolition of the involuntary cough reflex. Our custom is to spray the pharynx with 3 cc. of 4 per cent cocaine, swab each piriform sinus and the epiglottis with 1 cc., and inject 5 cc. of 5 per cent larocaine down the trachea. Larocaine is used for intratracheal instillation because of its theoretical advantage of lowered toxicity in comparison with cocaine. No reaction has been encountered with either agent.

INSERTION OF CATHETER

The method used is similar to that described by Baker.² The urethral catheter is threaded on the metal stylet, bent to an 80 degree angle 3 inches from the distal end. The laryngeal mirror is used and the catheter is introduced into the trachea and the stylet removed. The catheter should lie about 2 inches above the carina, and no effort is made to introduce it into the primary bronchi. The patient closes his lips on the catheter and then is asked to sit on a flat top table adjacent to an x-ray tube stand, where the actual injection is done.

IODIZED OIL INJECTION

A series of positions is assumed as the injection proceeds which allows gravity filling of all bronchial subdivisions. These are outlined in the accompanying series of sketches. The side of the chest suspected of disease should be examined first. If both sides are under scrutiny, it is customary to fill the left side first. The iodized oil is injected at room temperature, as this minimizes alveolar filling.

Figure 2. Four cc. is run down the left primary bronchus into the dorsal divisional bronchus and the lower lobe segmental bronchi. The position is held for one minute.

Figure 3. Two cc. is run down the left primary bronchus and into the left upper lobe bronchus. The position is held for one-half minute.

Figure 4. One cc. is injected to insure filling of the lingula as it is brought into dependent position. After one-half minute 3 cc. is injected and the patient is placed in the position of figure 5.

Figure 5. The position is held for two minutes to fill the apical segments and the patient is turned into the position of figure 6.

Figure 6. This position is held for one minute to complete filling of the posterosuperior segment and the dorsal division and then changed to the position of figure 7.

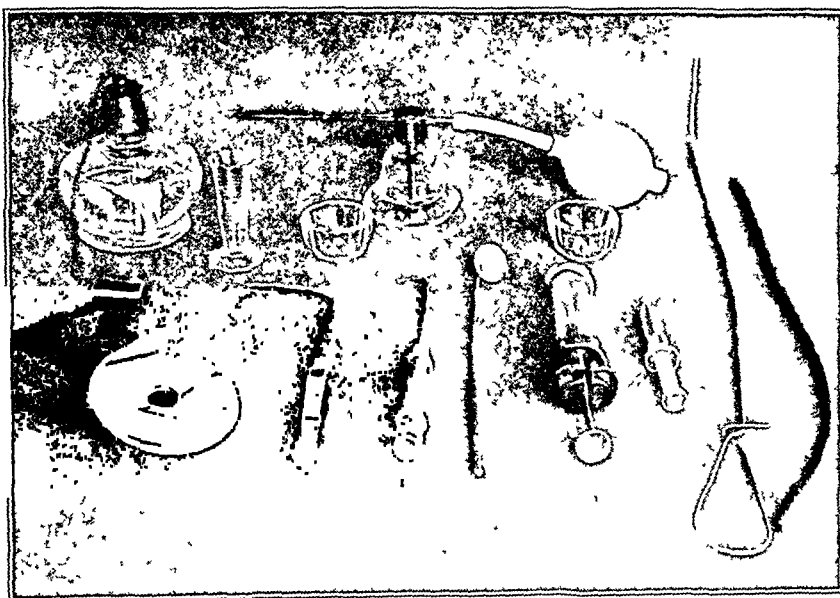


Fig 1—Materials required

sulfate one-half hour beforehand is useful for its effect in controlling the cough reflex. Atropine, given with the morphine, decreases the amount of secretion and thereby enhances the efficiency of topical anesthesia and iodized oil distribution.

It is important to have the bronchi empty at the time of examination. Postural drainage accompanied by voluntary coughing and efforts to raise sputum three hours before injection is used to this end. Thereafter the patient should neither eat nor drink until three hours after the procedure. Unless the bronchi are cleared of secretion before the injection, the examination will be rendered unsatisfactory by spasmodic coughing due to poor anesthesia and by failure of iodized oil properly to enter and delineate secretion-filled areas. The oil should be introduced and the x-ray films taken in the same room. The induction of anesthesia and the introduction of a catheter can be done in an adjoining room if this procedure is desirable, but the patient should not be made to walk from one room to another after the oil has been injected, as loss of time or involuntary cough will cause the picture to be marred by alveolar filling.

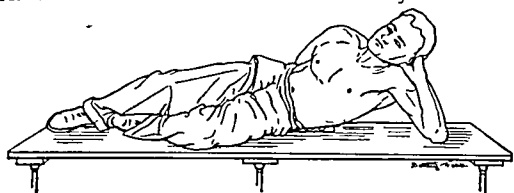
² Baker, D. C., Jr: *Pneumonography, Laryngoscope* 46: 673 877 (Nov.) 1936

Figure 7. This position is held for one-half minute to insure complete filling of the basal division and then changed to the position of figure 8.

Figure 8. This position is held for one-half minute and a lateral view x-ray film is exposed with the patient lying on a cassette holder and the x-ray tube 4 feet above the table top.

At this point seven minutes will have elapsed and 10 cc. of iodized oil will have been injected. Filling

These films are developed immediately and examined. Meanwhile the patient lies quietly on a table. If any exposures need to be repeated, that is done. If the



Figs. 2 to 10.—Positions held during injections of iodized oil.
Figure 2.

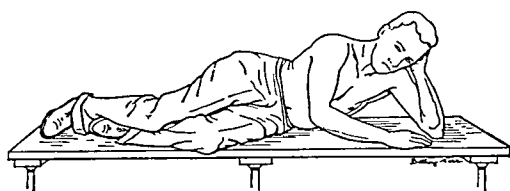


Figure 3.

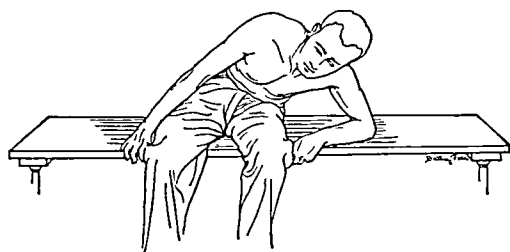


Figure 4.

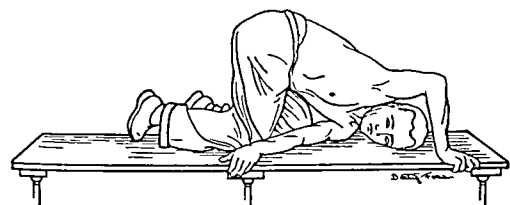


Figure 5.

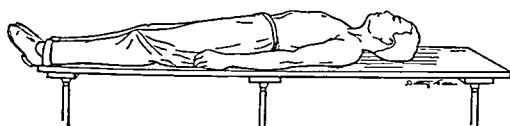


Figure 6.

of the opposite side is begun immediately and is performed in a manner similar to that just described. The right middle lobe will be filled by positioning comparable to that used for outlining the lingula on the left side. At the end of the procedure 20 cc. of iodized oil and fifteen minutes will have been required.

The patient then moves off the table and stands before an upright cassette 5 to 7 feet from the x-ray tube, where four additional exposures are made. These are:

- Posteroanterior.
- Posteroanterior with Lyshom grid.
- Right anterior oblique (fig. 9).
- Left anterior oblique (fig. 10).

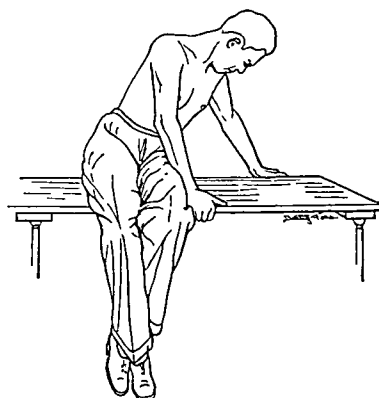


Figure 7.

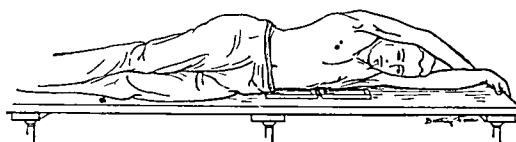


Figure 8.

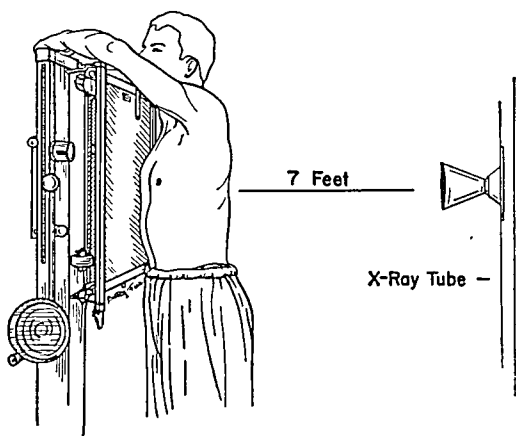


Figure 9.

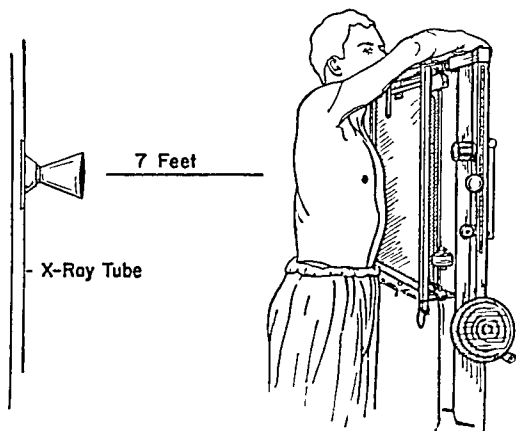


Figure 10.

films are found satisfactory, the patient is placed in the head-down position and urged to cough up the iodized oil.

DETAILS OF FILMS

Thin, over-all coating of the bronchi is preferable. Alveolar filling is to be avoided.

One good posteroanterior film will often give most of the information needed for diagnosis. The others are necessary for confirmation, for careful study of special segments and for assurance that necessary views for subsequent study will be available. One cannot reduce the number of films without risk of lacking essential information on an important case.

The first lateral film taken defines posterior and anterior branches of the suspected side and gives a picture of spatial relationships that cannot be had when both sides are filled because of overlying shadows. The grid film allows detailed study of areas that may be too dense to show in ordinary films, such as an atelectatic left lower lobe lying behind the heart. By means of the right anterior oblique position the left side is thrown forward into relief, presenting a view of the important lingula bronchus (fig. 9). A similar portrayal of the right middle lobe is accomplished with the left anterior oblique exposure (fig. 10).

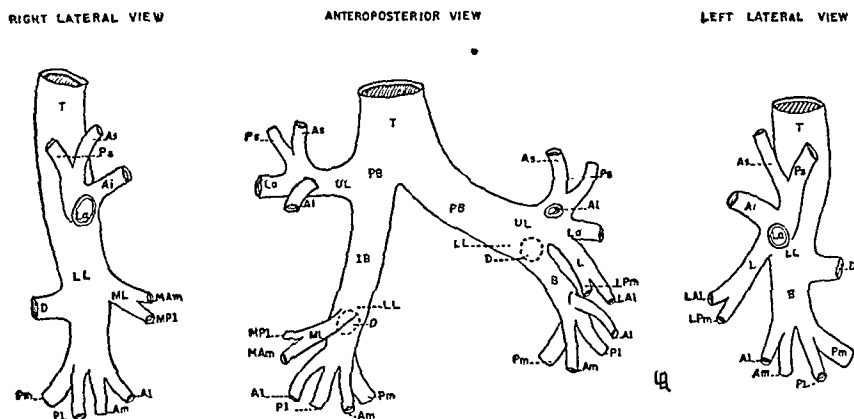


Fig. 11.—Bronchial tree: T, trachea; PB, primary bronchus; UL, upper lobe bronchus; Ai, anteroinferior segmental bronchus; La, lateral segmental bronchus; As, anterosuperior segmental bronchus; Ps, posterosuperior segmental bronchus; D, dorsal divisional segmental bronchus; ML, right middle lobe bronchus; LL, lower lobe bronchus; Pm, posteromedial segmental bronchus; Am, anteromedial segmental bronchus; B, basal divisional bronchus; L, lingula divisional bronchus; PL, posterolateral segmental bronchus; AL, anterolateral segmental bronchus; LAL, anterolateral segmental bronchus of lingula; LPm, posteromedial segmental bronchus of lingula; MPL, posterolateral segmental bronchus of right middle lobe; IB, intermediate bronchus.

CONTRAINDICATIONS

Cases of active pulmonary tuberculosis, acute lung abscess, intrinsic asthma and suspected tumor should not be investigated by means of iodized oil unless exceptional reasons exist for the procedure. The information as recorded by iodized oil films frequently may be more striking in these cases but rarely is it additional to that available from x-ray study alone. Spread of tuberculous infection has been observed after iodized oil injection, and retained oil complicates indefinitely the interpretation of parenchymal shadows. Asthmatic persons occasionally suffer acute respiratory distress following injections, and care should be exercised to inject only one side if iodized oil films are deemed essential for study of localized disease. A diagnosis of obvious bronchial tumor may be more clearly demonstrated to the uninitiated by means of iodized oil, but important incipient signs may also be hidden from the expert in a difficult early case. Careful fluoroscopy and films in expiration as well as inspiration are more valuable aids in such cases. Oil trapped behind an obstructing tumor is a hazard that should be avoided, as it may cause pneumonitis.

NOMENCLATURE

The problem of correctly naming the tracheobronchial subdivisions has become increasingly pressing as techniques of x-ray reading, bronchoscopy, bronchography and pulmonary resection have appeared and improved. A complete reexamination of the surgical anatomy of the subdividing pulmonary vessels and bronchi has been required with attention not only to details of structure but also to simplification and improvement in nomenclature in order to meet modern practical requirements. As early as 1889 Ewart,³ stimulated by the original work of Aeby, published a classic monograph on "The Bronchi and Pulmonary Blood Vessels." The prefatory paragraph is of historical interest:

These pages have a general purpose which extends beyond the limits announced in their title. They represent an attempt to remove the too prevalent impression that the field of pulmonary investigation, having yielded all its fruit, is henceforth likely to remain barren. Although advised, not long ago, by an eminent physician, to turn my attention to some other organ less "worked out" than the lung, I have found no reason to complain of my subject, and I may even succeed in showing that, so far from this being an exhausted territory, there remain

within it some districts almost unexplored. . . . Moreover, a suspicion has arisen in my mind that the present deficiencies in our anatomical knowledge (some part of which it will be my endeavor to fill) might perhaps be held responsible for the halting and spasmodic feature in the development of pulmonary surgery, contrasting with the steady progress made in the surgery of other organs.

Ewart's monograph was the first serious attempt to construct a systematic nomenclature of the air tubes. He presumed the lack of a system due both to lack of need for one and to lack of systematic study. Since his time the need for a uniformly accepted system has increased steadily, and the bronchial distribution has been made a subject for intensive systematic study by numerous authors, much of it of a high order.⁴ The present difficulty

arises from a plethora of names for each ramification and from an effort to carry into working charts such details and variations as might more suitably be confined to the fundamental works of reference. Troubles have arisen, therefore, both from complexity of the individual systems and from lack of agreement among them.

3. Ewart, William: The Bronchi and Pulmonary Blood Vessels; Their Anatomy and Nomenclature, with a Criticism of Professor Aebys' Views on the Bronchial Tree of Mammalia and of Man, London, J. and A. Churchill, 1889.

4. Articles on bronchial distribution: Sicard, J. A., and Forestier, Jacques: Méthode générale d'exploration radiologique, par l'huile iodée (lipiodol), Bull. et mém. Soc. méd. d. hôp. de Paris 1: 463, 1922. Bethune, N.: Technique of Bronchography for General Practitioner, Canad. M. A. J. 21: 662 (Dec.) 1929. Davis, J. D.: Anatomic Variations of Normal Tracheobronchial Tree, Arch. Otolaryng. 9: 404 (April) 1929. Kramer, R., and Glass, A.: Bronchoscopic Localization of Lung Abscess, Ann. Otol., Rhin. & Laryng. 41: 1210 (Dec.) 1932. Moolten, S. E.: Simple Apparatus for Fixation of Lungs in Inflated State, Arch. Path. 20: 77 (July) 1935. Levitin, Joseph, and Brunn, Harold: A Study of the Lower Lobe of the Lung, Arch. Int. Med. 57: 649 (April) 1936. Grandgérard, R., and Heim de Balsac, R.: La trame primaire des poumons et la destination corticale de ses ramifications; étude anatomique, radiologique et clinique, Presse méd. 45: 444 (March 20) 1937.

(Footnote 4 continued on next page)

In the belief that a simple terminology, acceptable to a majority of workers in the thoracic field, is a primary condition for successful study and continued advance in the subject, we are proposing a classification designed to meet the practical needs of internists, radiologists, bronchologists and surgeons. It is in no sense a new arrangement and new names are not recommended, as our first concerns are simplification and reduction of confusion. Personal investigation of material at the operating table and of fresh autopsy specimens over a five year period has furnished first hand knowledge for the task of synthesizing the terminology of the proposed system.

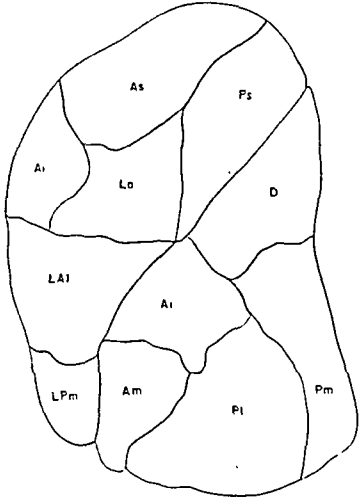


Fig. 12.—Left lung, lateral view: *As*, anterosuperior segment; *Ps*, posterosuperior segment; *Ai*, anteroinferior segment; *La*, lateral segment; *D*, dorsal divisional segment; *LAI*, anterolateral segment of lingula; *Ai*, anteroinferior segment; *LPm*, posteromedial segment of lingula; *Am*, anteromedial segment; *Pl*, posterolateral segment; *Pm*, posteromedial segment.

taken after injection of iodized oil. These films necessarily record on a single plane the projection of bronchi into myriad planes. Schematic representation of the bronchial tree by free-hand drawings may wander far from reality when one relies for accuracy on artists' impressions of spatial relationships. Therefore the diagrams used here are actual tracings from actual bronchograms of patients under clinical investigation (fig. 11 and the table). The proposal specifically omits the finer ramifications and subdivisions, the practical importance of which from the standpoint of diagnosis and therapy lie in the future. Working terminology for these finer tubes may be added to the present system whenever the need arises.

The term primary bronchus is suggested for the two divisions of the trachea as preferable to main, major, arterial or trunk. The classification according to lobes is obvious and follows the usage of all authors except Nelson.⁵

The peripheral marking of the lungs by fissures and septums is subject to considerable irregularity and variation in degree. For example, the right middle lobe frequently is scarcely demarcated from the

The clinical study of bronchopulmonary subdivisions is made on x-ray films

right upper lobe, while the dorsal division of the right lower lobe occasionally is separated by a distinct fissure from the basal division, and the lingular division of the left upper lobe shows wide variations in depth of fissures. These portions of the lung have special sig-

Structural Anatomy of the Lung

Lobe	Division	Segment
Left upper.....	Apical	Anterosuperior
		Posterosuperior
		Lateral
Left lower....	Lingular	Anterolateral
		Posteromedial
Right upper.....	Dorsal	Anteromedial
		Posteromedial
		Anterolateral
Right middle.....	Basal	Posterolateral
		Anteromedial
		Posterolateral
Right lower....	Dorsal	Anteromedial
		Posteromedial
		Anterolateral

nificance both pathologically and surgically. Pulmonary tuberculosis occurs predominantly in the apical division. The lingula is involved in bronchiectasis in 80 per cent of the left lower lobe cases.⁶ The dorsal division of the lower lobe is a frequent site of putrid lung abscess.

Involvement of this same division by bronchiectasis is rare, even though the predominant site of bronchiectasis is in the contiguous basal division of the lower lobe. The ability to remove these portions surgically for localized disease has been demonstrated. The term division is proposed to indicate these surgically and pathologically important anatomic portions of lobes.

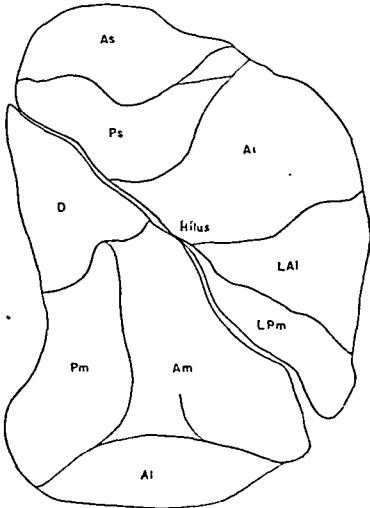


Fig. 13.—Left lung, medial view: *As*, anterosuperior segment; *Ps*, posterosuperior segment; *Ai*, anteroinferior segment; *D*, dorsal divisional segment; *LAI*, anterolateral segment of lingula; *LPm*, posteromedial segment of lingula; *Am*, anteromedial segment; *Pm*, posteromedial segment; *Al*, anterolateral segment.

Thus, the left upper lobe has apical and lingular divisions and each lower lobe has dorsal and basal divisions. The right upper lobe may be thought of, if desired, as having only an apical division, while the right middle lobe possesses no divisional substructure.

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Behr, E., and Huizinga, E.: On the Division of the Lung Segments in the Right Upper Lobe, *Acta radiol.* 19: 399, 1938.
Neil, J. Hardie; Gilmour, W.; Gwynne, F. J.; Main, Wallace, and Fairclough, W. A.: The Anatomy of the Bronchial Tree and Its Clinical Application, *Australian & New Zealand J. Surg.* 8: 115 (Oct.) 1938.
Pierret, R.; Coulouma, P.; Breton, A., and Devos, L.: Étude anatomique de la zone dorsale moyenne du poumon (lobe moyen postérieur de Deve, sommet de Fowler), *Ann d'anat. path.* 15: 233 (March) 1938.
Nelson.⁵
5. Nelson, H. P.: Postural Drainage of the Lungs, *Brit. M. J.* 2: 251 (Aug.) 1934.

6. Churchill, E. D., and Belsey, Ronald: Segmental Pneumonectomy in Bronchiectasis: Lingula Segment of Left Upper Lobe, *Ann. Surg.* 109: 481 (April) 1939.

The identification of portions of divisions brings one to the smallest unit of lung tissue of practical diagnostic or therapeutic importance at the present time, the bronchopulmonary segment. This we define as a subdivision of the pulmonary lobe delimited by avascular, diverging planes which may or may not be indicated by complete or partial fissures. Its apex lies in the hilus and its base fills an area on the lung periphery. It is supplied by integral bronchi and blood vessels, which vary in the manner of origin and intercommunication with the hilus but are fairly constant in their end distribution.

The right upper lobe is considered to consist of four segments, named anterosuperior, posterosuperior, anteroinferior and lateral. The right middle lobe consists of anteromedial and posterolateral segments. The lower lobe has two divisions, dorsal and basal. The dorsal division requires no subnames at this time. The basal division is characteristically divided into posteromedial, posterolateral, anteromedial and anterolateral segments. The left upper lobe has two divisions, one the lingular and one the apical. The lingula divides into anterolateral and posteromedial branches. The apical division separates into segments in a similar manner to the right upper lobe.

A frequent cause of confusion has been the variations of the smaller bronchi in their arrangement, both with respect to point of origin and to number visible bronchoscopically. Sometimes, for instance, only two segmental bronchi are visible at the end of a lower lobe bronchus, and occasionally all four are clearly seen, but the underlying subdivisions into bronchopulmonary segments are maintained beyond the hilar variations. Dissections and injections have shown that the segments described, surrounded by planes of avascular tissue, uncrossed by bronchi or blood vessels beyond the hilus, are found with remarkable constancy in the periphery of the lungs. In the hilus the segmental integrity is lost in a maze of interlacing bronchi, arteries and veins, varying from case to case and thus far defying exact classification.

SUMMARY

Bronchography has become an essential diagnostic aid in the investigation of many thoracic problems. An accurate, complete, intelligently made bronchogram can reasonably be expected of any one who undertakes the procedure. A simple, almost uniformly successful technic which is suitable for general use has been developed.

An adequate, accepted bronchial nomenclature is lacking but hoped for by a majority of workers in the thoracic field. A terminology is proposed to meet the practical needs of internists, radiologists, bronchologists and surgeons. Simplification and reduction of confusion are hereby sought.

ABSTRACT OF DISCUSSION

DR. CHEVALIER L. JACKSON, Philadelphia: The importance of bronchography is universally recognized now, and most thoracic clinics require the mapping of all five lobes of the two lungs before an operation such as lobectomy or pneumonectomy is attempted, certainly before it is done for bronchiectasis. I agree with the great efficacy of the technic which Drs. Adams and Davenport have described. This technic is very similar to one that we decided was most convenient for our needs. Dr. Maurice Bonnier and I described that technic about four years ago before the American Bronchoscopic Society, and the description was published in the *Annals of Otolaryngology, Rhinology and Laryngology* for September 1937. We had a number of years

before that given up the use of the bronchoscopic method of instillation of iodized oil because the catheter method has many advantages. We do not find it necessary to use a swab application in anesthesia. We use a spray and instillation of anesthetic solution preliminary to the introduction of the catheter. The posturing of the patient has been beautifully illustrated by the authors. As was shown, however, it is necessary to change the posture according to the portion of the bronchial tree which we wish to fill. I think they are very ambitious to attempt to fill all lobes of both lungs at one sitting, but under the most favorable conditions that can be done. It is our practice to do the study in two sittings, mapping the more involved one first, and then at a second sitting a few days later, or a week later, mapping the other lung. It is very important to insist on the use of oblique films if the two lungs are filled at the same sitting. I am in full agreement with the relative contraindications that have been mentioned. These contraindications are relative and not absolute. In 1939 I had the pleasure of seeing Dr. Hardie-Neil demonstrate the "bronchopulmonary segments" with the inflation method, using the prepared specimen and inflating each segment separately with a little air bulb and glass catheter. Ever since I saw this demonstration, in Honolulu, I have been working along with Dr. Huber of our department of anatomy on this subject. The importance of the segmental bronchus and the bronchopulmonary segment is definitely established. The bronchoscopist and bronchologist deserve the credit of pointing out the importance of the anatomy of the bronchi and lobes in thoracic disease. A number of years ago the bronchoscopists and bronchologists began insisting on lateral films, even before the bronchographic studies became routine in the study of these cases. Now, with the recognition of the conception of the segmental bronchi and the bronchopulmonary segment a further practical advance has been made.

DR. LOUIS H. CLERF, Philadelphia: I am interested in the presentation of Drs. Adams and Davenport, particularly in the multiposturing of the patient during mapping of the individual lung. This is one of the great difficulties, namely, to get the iodized oil in the desired location; obviously the catheter method has simplified this. It is not readily accomplished by the bronchoscopic method. For that reason I have been employing the catheter method for some time, using the coudé catheter and in certain instances the Thompson catheter. I wish to ask what type of catheter the authors employ. The nomenclature that is suggested seems practical. After all it must be based on anatomic distribution of the bronchi. It is necessary that we all use a common language in describing the tracheobronchial tree so that internists, surgeons and roentgenologists will be able to interpret our findings.

DR. RALPH ADAMS, Boston: I am grateful to Dr. Jackson for giving credit to previous workers who have studied this problem, and much of their work has been of a very high order. Ewart in 1889 was the first to direct attention to this subject and wrote a classic monograph on it, which can now be obtained only with difficulty. Neil, Jackson, his co-workers, Baker and many others have contributed. The technic of anesthesia was not elaborated, as we believed it to be superfluous before this group. A number 16 ordinary urethral catheter is commonly employed by us. In a previous publication we discussed the merits of the Thompson catheter for serial selective bronchography, as may be employed for the limited or localized study of special segments in particular cases. The oil should be injected at room temperature rather than warmed, because this minimizes alveolar filling, which in turn allows better study of the bronchial pattern and reduces complications which might arise, such as pneumonitis. The nomenclature proposed has been submitted informally to a number of leading thoracic clinics through their chiefs of service, Drs. Graham, Alexander, Eloesser and Doley, and I hope that Dr. Clerf has considered it also to determine whether they would be willing to accept this proposal or to accept it with modifications which they might suggest. We hope that this proposal, or a modified one, may become commonly used.

INTRAVENOUS ANESTHESIA

PAUL W. SEARLES, M.D.

BUFFALO

The simplicity of administration and the lack of detrimental effects of the short acting barbiturates have tended to increase their value for intravenous anesthesia greatly.

The historical background for intravenous anesthesia began with the use of chloral hydrate in 1872 by Ore of France. Following this, a group in Petrograd first used hedonal (methyl propyl carbinol urethane) in 1905. The volatile anesthetics were then used. Ether was given in saline solution intravenously by Burkhardt of Germany in 1909, and chloroform also had a brief trial. In this country Noel and Scuttar first used paraldehyde for this purpose. A brief trial was given ethyl alcohol by Marin of Mexico City in 1929. Avertin with amylene hydrate, first used in 1929 by Kirschner in Germany, had but little intravenous use. None of these received general recognition for intravenous anesthesia.

The first barbiturate to be administered intravenously was somnifen, a mixture of barbital and dial, and was introduced in 1924 in France by Fredet and Perlis. This preparation was subsequently changed to barbital and alurate. Pernoston was introduced by Bumm in Germany in 1927 and is still being occasionally used. It was probably the best intravenous anesthetic to be used prior to evipal. Following this, sodium amytal was introduced in this country in 1929 by Zervas. Pentobarbital sodium (nembutal) was tried in 1930 and found to produce a prolonged postoperative sleep.¹ Evipal soluble was first used in Germany by Weese and Scharpf in 1932. Pentothal sodium was introduced by Lundy and Tovell² in 1934. There have been a few barbiturates, namely, soneryl, eunarcon, methyl luminal and thio amytal, which have been introduced in the recent years but which do not appear to have particular merit as intravenous anesthetics.

Thus far the short acting barbiturates evipal soluble and pentothal sodium have proved the most satisfactory agents for producing intravenous anesthesia. Pentothal sodium is more potent than evipal soluble and affords greater surgical relaxation.

During the last six years I have had the opportunity of personally administering over two thousand anesthetics with short acting barbiturates and to observe the use of these drugs by other anesthetists in a like number of cases.

INDICATIONS

It is my purpose to suggest that intravenous anesthesia with pentothal sodium and evipal soluble can be used in certain major as well as minor operations and to emphasize their advantage for the "poor risk patient."

Where the short acting barbiturates are used in certain types of major operations they should be given in conjunction with other methods of anesthesia such as avertin with amylene hydrate, local block or nitrous oxide-oxygen. Brain surgery at the Buffalo General Hospital has been performed for the last two years under a combination of anesthesia which consists of a

basal dose of avertin with amylene hydrate, an infiltration of the line of incision with 1:15,000 nupercaine solution and intermittent doses of sodium pentothal. Rarely is there more than 1 Gm. of pentothal solution required for the entire procedure, which may take from four to five hours. A three way stopcock is fitted to a continuous intravenous drip and serves to administer both the anesthetic and fluids as desired. If the airway is inadequate an intratracheal tube can be inserted. Oxygen can and should be administered. This combination of anesthetics is ideal for brain surgery and I think greatly reduces the element of shock.

The administration of pentothal sodium to supplement an abdominal wall block and splanchnic block in a gastric resection results in good surgical relaxation with a minimum of shock for the patient. The intravenous anesthetic is administered in conjunction with a continuous intravenous drip as described. The intravenous anesthesia relieves the pain that may be caused subsequent to locating and injecting the splanchnics and also makes it possible to close the abdomen without straining on the part of the patient. If the patient is allowed to regain consciousness during the major part of the operation, it is seldom that more than 1 Gm. of pentothal solution is required for the operation. Oxygen should be administered continuously during the operation.

Previous experiments³ on dogs led me to believe that the barbiturates possessed a tendency to protect the animal organism against shock. Seely, Essex and Mann⁴ found that the onset of shock was delayed in animals given sodium amytal anesthesia as compared with those given ether anesthesia. Subsequent clinical experience has substantiated this contention and we are now using pentothal sodium in order to prevent shock in the "poor risk patient." Individuals with severe anemia, debility or senility tolerate pentothal very well. Lundy and his co-workers⁵ state that "the site of destruction of this thiobarbiturate is not known definitely at this time. The drug leaves the blood stream within a few minutes of its introduction and its effects on most patients who have disease of the liver and kidneys does not appear to differ greatly from its effect on patients with normal organs. Therefore we do not feel that intravenous anesthesia is contraindicated when disease of the liver or kidneys is present but it is wise to exercise greater caution with its administration." We have found that the diabetic patient tolerates the short acting barbiturates very well and feel that some of the decrease in our mortality in diabetic amputations can be attributed to their use. Fractures in the old age group, especially those of the hips, are well handled under intravenous anesthesia. It is well to avoid the use of morphine in this old age group, as the incidence of pulmonary complications may be increased when it is used. It is also important that a light anesthetic should be used throughout the entire anesthetic period.

The greatest use of intravenous anesthesia is found in minor surgery in which profound muscular relaxation is not required. Thus in a great variety of procedures such as breast biopsies, rib resections, dilation and curettage, vaginal perineal repair, removal of painful dressings, reduction of fractures, skin grafts, cystoscopy, certain cases of prostatic resection and numerous opera-

From the Buffalo General Hospital.
Read before the Section on Anesthesiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Lundy, J. S.: Experience with Sodium Ethyl (1 Methyl Butyl) Barbiturate (Nembutal) in More Than Twenty-Three Thousand Cases, *S. Clin. North America* 11: 909-915 (Aug.) 1931.

2. Lundy, J. S., and Tovell, R. M.: Annual Report for 1934 of the Section on Anesthesia, Proc. Staff. Meet., Mayo Clin. 10: 257-272 (April 24) 1935.

3. Searles, P. W.: The Effect of Certain Anesthetics on the Blood, *J. A. M. A.* 113: 906-909 (Sept. 2) 1939.

4. Seely, S. F.; Essex, H. E., and Mann, F. C.: Comparative Studies in Traumatic Shock Under Ether and Sodium Amytal Anesthesia: Experimental Research, *Ann. Surg.* 10: 332-338 (Sept.) 1936.

5. Lundy, J. S.; Tuohy, E. B.; Adams, R. C., and Mousel, L. H.: Clinical Use of Local and Intravenous Anesthetic Agents: General Anesthesia from the Standpoint of Hepatic Function, Proc. Staff Meet., Mayo Clin. 16: 78-80 (Jan. 29) 1941.

tions of this character, intravenous anesthesia is satisfactory. Esophagoscopy and bronchoscopy can be satisfactorily performed under anesthesia with pentothal sodium, provided a fairly deep anesthesia is obtained before the insertion of the instrument. Preliminary cocaineization of the throat should be carried out.

Certain uses have served to broaden the field of intravenous anesthesia. An intravenous anesthetic is valuable as a preliminary to the induction of an inhalation anesthesia to eliminate the fear which some patients have of a face mask. Likewise the pain experienced by some patients in the performance of certain local or regional blocks can be eliminated by preliminary administration of pentothal sodium. This method also can be used successfully to prolong spinal anesthesia or to prevent the accompanying nausea. However, the intravenous administration of the barbiturate during spinal anesthesia should be done cautiously in order to avoid a decided drop in blood pressure or slowing of respiration. Intravenous anesthesia as a preliminary induction to nitrous oxide-oxygen anesthesia for dental extraction has proved satisfactory in our hands. The use of intravenous anesthesia as a means for eliminating the explosion hazard in the operating room is especially valuable when a cautery or an electrical appliance is to be used.

ADMINISTRATION

A preliminary medication of pentobarbital sodium, morphine and atropine can be given to advantage before the intravenous use of pentothal sodium. The morphine and pentobarbital sodium greatly decrease the amount of drug necessary to use, and the atropine minimizes the possibility of laryngeal spasm, coughing and hiccups.

The administration of pentothal sodium is accomplished by the intermittent injection of a 2.5 per cent solution of the drug. My technic consists in a preliminary test dose of 1 to 2 cc. of the pentothal sodium solution to determine the relative tolerance which the patient has for the drug and also to prevent any danger of giving too large a dose on induction. This inductional tolerance varies greatly with each patient. I have found that as little as 2 cc. of a 2.5 per cent solution produced sufficient anesthesia in a debilitated patient to perform a complete amputation of an arm, while in other cases 1 Gm. of pentothal sodium failed to render the patient unconscious. After the preliminary injection has been accomplished the patient is asked to count, and while he is counting 1 to 2 cc. of the solution is injected at intervals until the patient is unconscious. The presence of surgical anesthesia is elicited by the lack of response to painful stimuli. Further small doses are injected when the anesthesia becomes too light.

Overdosage results in imperceptible respirations and later cessation of respirations accompanied by the development of cyanosis. Treatment consists in stopping the administration of the intravenous anesthetic, establishing an airway and performing artificial respiration. Oxygen and carbon dioxide should be administered and respiratory stimulants such as nikethamide, metrazol or picrotoxin should be injected intravenously in sufficient dosage to obtain a stimulation of respiration.

CONTRAINDICATIONS

The administration of large doses of these short acting barbiturates should be avoided because of the possible sequelae, such as a long postoperative depression or in some cases the occurrence of toxic symptoms manifested by an elevation of temperature or a rash. The dose can always be decreased when necessary by supplementing the intravenous anesthetic with other types of anesthesia.

It is well to avoid the use of intravenous anesthesia in patients with a cardiac history. This is especially true in patients suffering from dyspnea, whether it is of cardiac or of pulmonary origin. Pentothal is not always a good anesthetic for children under 10 years of age because of their small veins and because of the greater need for oxygen. However, if oxygen is administered to the child in conjunction with the intravenous anesthesia and great care is taken not to produce a profound anesthesia, pentothal sodium will prove satisfactory. Operations about the nose and throat should not be done under intravenous anesthesia unless blood or mucus can be cleared from the passageways and an efficient airway maintained at all times. The use of pentothal sodium in a patient who is receiving a drug containing sulfur is debatable, as there may be a cumulative effect. Evipal soluble can be used without fear of administering too much sulfur.

SUMMARY

The use of short acting barbiturates is not confined to minor operations. Small doses of pentothal sodium given intravenously will produce satisfactory anesthesia for major operations, provided other methods of anesthesia such as avertin with amylene hydrate, local block or nitrous oxide-oxygen is used in combination with the intravenous anesthesia. Pentothal sodium may be used to advantage for the "poor risk patient" because of the protective action against shock which is exerted by the barbiturates. Owing to the ease of administration and the type of anesthesia produced, the short acting barbiturates have become the anesthetics of choice in numerous other surgical procedures.

ABSTRACT OF DISCUSSION

DR. ROLLAND J. WHITACRE, East Cleveland, Ohio: The widespread use of intravenous anesthesia with the short acting barbiturates has made it necessary to advance certain definite recommendations for their use. Dr. Searles has performed a valuable service in clearly setting forth the scope of usefulness of intravenous anesthesia as well as its contraindications. I should like to emphasize the importance of the conservative use of these short acting barbiturates. By conservative I refer not to the number or variety of cases but specifically to the amount of drug used in each case. Without a doubt large doses of these drugs increase the incidence of untoward complications. Likewise technical skill, although undeniably important, is not sufficient reason for advocating the routine use of unsupplemented intravenous anesthesia with the short acting barbiturates. Dr. Searles has indicated numerous instances in which intravenous anesthesia may be used to advantage in conjunction with other agents. Undoubtedly, this method of using minimal doses of pentothal sodium or evipal will be found to be valuable in still other surgical procedures. During the past few years my associates and I have used pentothal and nitrous oxide successfully in many of our cases undergoing thyroid surgery. With premedication, usually not more than 0.5 Gm. of pentothal is required for the entire procedure. It has been demonstrated that the use of dilute solutions of pentothal sodium materially increases the margin of safety of this method of anesthesia. It has been our experience that a 2.5 per cent solution and, on occasion, a weaker dilution of pentothal sodium is adequate to produce satisfactory anesthesia. A suitable method of supplying oxygen to the patient should always be available whenever intravenous anesthesia is administered. The advantage of pentothal sodium for major operations and poor risk cases is more apparent when minimal doses are used and, as Dr. Searles has pointed out, this is often accomplished by using pentothal sodium in conjunction with other agents.

DR. GEORGE J. THOMAS, Pittsburgh: With regard to the use of intravenous narcosis in combination with a continuous intravenous drip of solutions, patients receiving physiologic solution of sodium chloride or dextrose in combination with

pentothal sodium make a better recovery and show less toxicity to the anesthetic agent. The anesthetic and the supplemental fluid can be given through the same needle by the use of a manifold. The use of oxygen continuously is important and should not be overlooked. Dr. Searles stated that the diabetic, the anemic and old persons tolerate pentothal sodium surprisingly well. I too have found this to be a fact, provided the anesthetic agent is supported with an analeptic stimulant. It was mentioned that esophagoscopies and bronchoscopies can be satisfactorily performed under pentothal sodium, provided the throat is well cocaineized and deep anesthesia is obtained before intubation is attempted. I find that the provisions he mentioned are very important for a satisfactory anesthetic when nasotracheal or orotracheal tubes are used. Dr. Searles mentioned the contraindication in heart disease. My associates and I made an extensive electrocardiographic study of patients under pentothal sodium anesthesia and failed to observe much of any deleterious effect on the myocardium or the conductive system of the heart. Therefore I believe that in only the severe type of myocarditis should pentothal sodium be considered contraindicated. We have found pentothal sodium exceptionally useful in eye surgery. I attribute our success in the use of pentothal sodium in this type of surgery to our preanesthetic preparation of the patient. The occasional sneezing that we previously experienced in eye surgery has been absent. The instillation of cocaine in the eye preoperatively cocaineizes, via the nasolacrimal duct, the delicate and sensitive nerve endings of the nasal mucosa.

DR. JAMES YANICK, Hornell, N. Y.: It has been my experience with intravenous pentothal sodium anesthesia that minor operations, such as lacerations and cuts, require far more anesthesia than is required to relax the abdomen. It has been shown by workers at Cornell University Medical College that moderate amounts of barbiturates increase the sensitivity of the skin to pain, and pentothal sodium is a barbiturate. My observations with pentothal sodium anesthesia confirm their findings. We have a couple of good rapid surgeons by whom all uncomplicated appendixes are removed routinely under pentothal sodium. I have found that unless a saline drip is used the needle will clot up with blood, because so little pentothal sodium is used. After one has given enough pentothal sodium to desensitize the skin so that the incision can be made without the patient moving, one doesn't have to give another drop and one will have relaxation of the abdomen. Of course, if it is decided to do an exploratory or a prolonged operation, one can always shift to another type of anesthetic. Actually, appendectomies or abdominal operations of less than an hour, lower abdominal operations, require far less pentothal sodium than is required in repairing a 4 or 5 inch laceration from a cut from glass or an automobile accident. The first time one gives pentothal sodium, when a regional block is used, watch the reflexes of the patient very closely. So little is used that one cannot believe that the patient is anesthetized. I know that the first time I gave it for a herniorrhaphy with regional block anesthesia, when the patient was rather restless and uncooperative although the regional block was excellent, the small amount of pentothal sodium consumed where the skin was already desensitized was really marvelous.

DR. HAROLD D. GREEN, Cleveland: I should like to ask the author if he has had any experience with chloralose A. We have been using it in the Department of Physiology at Western Reserve for two or three years and have found that in animals it is a very satisfactory anesthetic. It acts fairly rapidly yet not quite so rapidly as evipal. The animals have apparently a higher blood pressure and withstand operation better, and it is our impression that we can withdraw more blood from an animal before his blood pressure drops to shock level than we can with some of the other barbital anesthetics.

DR. F. M. SUMMERVILLE, Oil City, Pa.: One doesn't find any deaths recorded, or practically none, but if one meets the fellows in the hall they can tell of a number of deaths. Ten different ones have told me about such deaths since I have been here. I should like to hear something about the deaths from intravenous anesthesia.

DR. PAUL W. SEARLES, Buffalo: I am very grateful to the discussers for bringing out certain points that I was unable to cover because of the time allotted and for enlarging on certain points, especially the contraindications, and the use of continuous oxygen throughout long operations. Dr. Whitacre emphasized the importance of the administration of small doses of pentothal sodium. Only by giving many of these intravenous anesthetics can one determine how small a dose will prove to be satisfactory. Of course, after the surgeon becomes accustomed to the use of intravenous anesthesia, a little movement now and then on the part of the patient is not too objectionable. It is important with administration of intravenous anesthesia in long operations that a patent needle should be maintained. Dr. Thomas emphasized the administering of pentothal sodium in conjunction with saline solution. I think that the manifold apparatus which he uses is very satisfactory. Intravenous anesthesia has been found to be a safe anesthetic when properly administered by a trained anesthetist. In answering the question tendered by Dr. Green, I do not believe that chloralose A has been used on human subjects. As to the deaths from pentothal sodium, I want to say that I have never had a patient die from the administration of pentothal sodium. I find that, when an overdose has been administered, the effects can be counteracted by giving artificial respiration and oxygen. If contraindications are carefully watched, the percentage of deaths will compare favorably with other types of anesthesia.

SPONTANEOUS CONVULSIONS FOLLOWING METRAZOL TREATMENT

ERICH LIEBERT, M.D.

ELGIN, ILL.

Opinion regarding the occurrence of epileptic convulsions in cases of uncomplicated schizophrenic psychosis is divided. While Kraepelin, Bleuler and Marchand reported that convulsive seizures not infrequently may be observed during the course of a schizophrenic psychosis, especially in catatonic patients, other authors have expressed the opinion that epileptic convulsions are extremely rare. The latter view has been expressed especially by Vorkastner¹ and by Strauss and Steiner,² who critically reviewed the literature on the subject. According to them the number of confirmed reports on epileptic convulsions in cases of dementia precox is extremely small, especially if strict criteria are applied in the evaluation of the various forms of attacks which may accompany a catatonic psychosis. If one demands the presence of pupillary disturbances, clonic-tonic movements and pathologic reflexes to indicate the epileptiform character of a seizure, the number of cases of dementia precox with attacks becomes extremely small.

Strauss and Steiner found in a group of 6,000 patients whose condition was diagnosed dementia precox only 20 in whom seizures had been reported. However, the evaluation showed that of these 20, in only 1 could the authors be certain of their epileptic nature. Recktenwald³ reported 4 cases of schizophrenia complicated by convulsions. In 1 the attacks seemed to be of a hysterical character; autopsy revealed in another a meningioma and in a third cerebral arteriosclerosis.

In the Elgin State Hospital, with a population of 2,564 patients with a diagnosis of dementia precox,

From the Elgin State Hospital and the Department of Nervous and Mental Diseases, Northwestern University Medical School.

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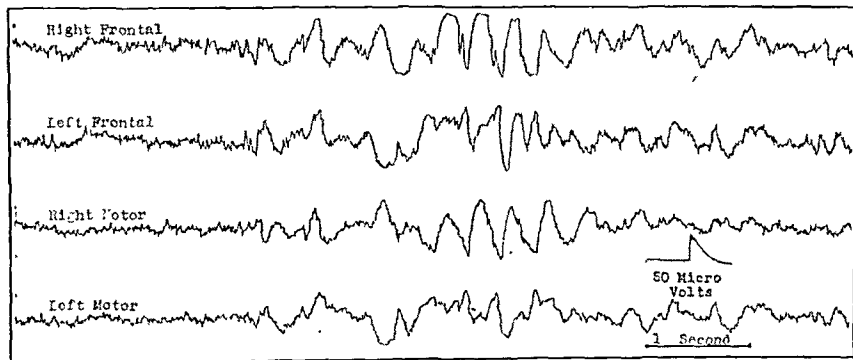
1. Vorkastner, W.: *Epilepsie und Dementia praecox*, Abhandl. a. d. Neurol. 4: 1, 1918.

2. Strauss and Steiner, in Bumke, Oswald: *Handbuch der Geisteskrankheiten*, Berlin, Julius Springer, 1932, vol. 9.

3. Recktenwald: *Epilepsieartige Krampfanfälle im Verlaufe der*

convulsive seizures are rare. In 2 such patients autopsy revealed intracranial neoplasms, a supracellular cyst in 1 and in the other a dermoid cyst of the pineal body. In a third patient, who died during his first epileptic status after a stay in the hospital of ten years, autopsy revealed an acute swelling of the brain. The statement made by the authors that "epileptic seizures are extremely rare in cases of schizophrenia, if they occur at all," is therefore in agreement with our own observations.

However, during the last two years the number of epileptiform attacks in schizophrenic patients seems to have increased. Within a relatively short time my associates and I have seen in the hospital 7 patients in whom repeated epileptiform seizures could be observed, while concerning an eighth patient, released from the hospital, the family reported attacks of unconsciousness. It was noted that all these patients, none of whom had ever had any convulsive disorders before, had undergone a series of metrazol convulsions and that the spontaneous seizures had started some time after the cessation of metrazol therapy. Concerning none of these patients except 1 reported on by the family and not directly observed by a physician was there any doubt as to the epileptic character of the convulsion.



Slow four per second discharge of high amplitude (patient B. R.).

The seizures occurred suddenly, without any premonitory symptoms, but not before several months had elapsed after the cessation of the metrazol treatment. The sequence of events is illustrated in the following case.

B. R., a woman aged 25, was admitted to one of the state hospitals in 1938. At admission it was stated that she had always been somewhat peculiar, although she was not considered psychotic until September 1938. At that time she complained that her body was deteriorating and that she was going to fall apart. She felt that people had been talking about her. Because of the symptoms she presented, the diagnosis of dementia precox of the hebephrenic type was made and metrazol treatment advised. The patient apparently improved; she expressed a desire to return home and had some insight into the fact that she had been mentally ill. In February 1939 she was paroled after a six month stay in the hospital. Fifteen months later, in May 1940, she suffered her first spontaneous convulsion. She fell suddenly to the floor, bit her tongue and foamed at the mouth; she did not regain consciousness for about five or ten minutes. The convulsive seizures at first repeated themselves at infrequent intervals, but they became more numerous and more severe; so that it was necessary to hospitalize the patient again, this time not because of the psychosis but because of the numerous epileptic attacks. Neurologic examination showed her to have strikingly increased deep reflexes, a positive Hoffmann reflex on both sides but no evidence of any involvement of the cranial nerves. Exami-

nation of the spinal fluid revealed a cell count of 3, negative Pandy and Ross-Jones reactions, a colloidal gold curve of 1110000000, a quantitative protein estimation of 32 per cent and a negative Wassermann reaction. A roentgenogram of the skull did not reveal any evidence of increased intracranial pressure or any other pathologic condition.

During her stay in the hospital the patient had a number of convulsions characterized by sudden loss of consciousness, tonic-clonic movements and dilatation and fixation of the pupils. During these attacks she sustained several severe injuries. There was no doubt as to the epileptic character of the seizures, which were controllable only by phenobarbital. In discussing her sensations before an attack she stated that some of the seizures began with a short aura. According to her own description: "I have a sensation like I am going to have a treatment of metrazol." She described also a feeling of tenseness on the left side of her face followed by dizziness and a disagreeable sensation in the epigastrium.

Other patients on whom information has been included in the accompanying table presented the same sequence of events. Eight are listed, ranging in age from 22 to 40. All except 1 had a diagnosis of dementia precox of one of the various subtypes, and all underwent a course, some patients several courses, of metrazol treatment. None had a history of a convulsive disorder

at any time, nor was there evidence of any convulsions or other epileptic phenomena prior to the use of metrazol, although some patients had been under close observation in the hospital for many years. There was no hereditary tainting. Roentgen examinations, some performed with air filling, did not reveal any evidence of a gross intracranial lesion which might be responsible for the occurrence of epileptiform seizures.

The spinal fluid examination, which included the colloidal gold test, qualitative and quantitative

protein determinations, cell counts and sugar and sodium chloride determinations, gave negative results.

As can be noted from the table, the convulsions occurred at least several months after the cessation of metrazol treatment. The interval ranged from three months to two years. Further treatment had been given in only 1 case, in which convulsive shock therapy was followed by a course of induced hypoglycemic states.

The convulsions observed were uniformly of the grand mal type, characterized by sudden loss of consciousness, severe generalized tonic-clonic movements and pronounced dilatation of pupils which did not react to light. Babinski's or Gordon's reflex was temporarily present shortly after the cessation of the seizure. Neither in symptoms nor in duration did the attacks differ from the disorders seen generally in grand mal epilepsy. Only 1 patient described an aura. No definite information was obtainable from the other patients, who were too uncommunicative. The electroencephalograms of these patients showed a large variety of the changes which are usually seen in epileptic disorders and which have been described in detail by Levy, Serota and Grinker⁴ as occurring in some of their cases after metrazol treatment.

4. Levy, N. A.; Serota, H. M., and Grinker, R. R.: *Electroencephalographic and Clinical Studies Following Metrazol and Electrically Induced Convulsive Therapy of Affective Disorders*, read before the Illinois Psychiatric Society in March 1941.

COMMENT

In 8 cases in which the diagnosis was dementia precox spontaneous convulsions occurred. The attacks started some time after the cessation of metrazol treatment. Although the 8 patients comprise only a small percentage of the schizophrenic population and of the metrazol-treated patients, it is noteworthy that the attacks occurred only in patients who had been treated with metrazol. No other etiologic factor could be discovered which might have been held responsible for the convulsions.

That paroxysmal electric dysrhythmias may be observed for several months after even a few injections of metrazol was reported by Levy, Serota and Grinker. These authors found changes in the electroencephalograms of 50 per cent of treated patients and in those of the more severely affected patients with epileptoid disturbances of the brain. Electric potentials developed characterized by three per second waves, bicuspid and tricuspid waves, spike and wave formations and substantially increased amplitude. Spontaneous epileptic convulsions were not observed by Grinker and his co-workers in their metrazol series. Read⁵ briefly

In the evaluation of our material, two facts seem to be outstanding. First, it took a considerable period—at least three months but mostly more than twelve months—before a spontaneous convulsion could be observed. Regarding this observation, one might think of the reports by Weil and his co-workers,⁹ who showed that in patients who had died several months after the cessation of metrazol treatment an extensive proliferation of the glia was present, involving astrocytes and microglia. These changes were similar to those found in experimental animals by the same authors. Although there was no direct relationship between the time elapsed after the cessation of treatment and the severity of the gliosis, there were well defined individual differences in the responses to the treatment. One might be inclined to link these facts together and to surmise that in cases in which spontaneous epileptic seizures develop the scar formation in the brain tissue is responsible for the lowering of the convulsive threshold. Neuronic alterations were observed also in his patients by Weil and have been observed by many other authors in patients who had died after metrazol convulsions. Grinker, in discussing a case of spontaneous convulsions

Data on Eight Patients with Dementia Precox Given Metrazol Therapy

Patient	Age	Sex	Diagnosis	Duration of Psychosis, Yr.	Hospitalization, Yr.	Heredity	Metrazol Treatment	Number of Convulsions	Initial Dose, Cc.	Spontaneous Seizures, Mo. After Treatment
J. K.	22	♂	Catatonic dementia precox.....	2	2	Normal	May 1937	25	3	3
H. K.	30	♀	Dementia precox of undetermined origin	5+	5	Alcoholism	January 1938	24	4.5	24
M. O.	22	♂	Dementia precox of undetermined origin	6	4	Normal	February 1938	16	5	23
B. R.	25	♀	Hebephrenic dementia precox.....	3	2	Normal	Fall, 1938	16	..	15
E. K.	22	♂	Dementia precox of undetermined origin	2	2	Normal	February 1939	15	3	9
J. J.	37	♀	Hebephrenic dementia precox.....	4	2	Normal	May 1939	9	3	19
H. A.	27	♂	Paranoid dementia precox.....	4½	4½	Normal	June 1939	53	3	18
A. O.	42	♀	Paranoid state.....	12	8	Normal	January 1938	..	..	17

mentioned the fact that spontaneous convulsions were observed some time after metrazol treatment; his case was included in this study. Another case was briefly described by Hartenberg.⁶

The question of the mechanism for the production of the spontaneous convulsions arises. It is a common saying that one fit always disposes toward the next one. However, the epileptiform convulsions due to an acute intoxication are usually not followed by chronic epilepsy. Up to the present only two substances, absinth and lead, have been known to cause epileptic convulsions even a long time after their use has been discontinued. Magnan,⁷ who studied this effect of absinth extensively, reported several cases of chronic epilepsy traceable to the use of absinth. Since oil of wormwood when given intravenously produces convulsions similar to those obtained with metrazol, one might be inclined to suspect a similar action for the two substances. Discussing the action of lead and absinth, Muskens⁸ surmised that "in such cases the threshold is lowered or the resistance of the patient has been so completely broken down that the ordinary sequence of daily life is sufficient to provide the stimulus for the succeeding fits."

after electric shock treatment, expressed the opinion that the neurons had been damaged to such a degree that ordinary stimuli might produce a convulsive seizure. This explanation might hold true for the spontaneous convulsions following metrazol therapy. Although the neurologic examination in our cases did not reveal any definite pathologic changes, a pathologic functioning of the brain was indicated by the electroencephalogram.

The second fact which seems to be of importance is that the initial dose of metrazol necessary for the production of a convulsion was low—lower than that for the average patient receiving metrazol treatment. One might think that our patients, although they had not had any epileptic seizures before treatment, had a convulsive threshold which could easily be broken down by the administration of metrazol. This might indicate that constitutional factors play a part. Before the administration of metrazol the convulsive threshold was high enough to avert epileptic seizures, but the pathologic alterations produced by the treatment lowered this threshold to such an extent that now ordinary stimuli were sufficient for the production of a convulsion. Since autopsy reports on our patients are not yet available, a definite correlation between the pathologic changes and the clinical picture still needs to be obtained.

5. Read, C. F.: Consequences of Metrazol Shock Therapy, *Am. J. Psychiat.* 97: 667 (Nov.) 1940.

6. Hartenberg, P.: Epilepsie consécutive à un traitement par le cardiazol, *Ann. méd.-psychol.* (pt. 1) 98: 73 (Jan.) 1940.

7. Magnan: Des principaux signes cliniques de l'absinthisme, *Rev. d'hyg.* 12: 909, 1890.

8. Muskens, L. J. J.: Epilepsy, New York, William Wood & Co., 1928.

9. Weil, Arthur, and Liebert, Erich: Neuropathologic Study of Six Cases of Psychoses in Which Metrazol Was Used, *Arch. Neurol. & Psychiat.* 44: 1031 (Nov.) 1940.

SUMMARY

In 8 patients epileptic convulsions developed three to twenty-four months after the cessation of metrazol treatment.

None of these patients had had any convulsive seizures prior to the metrazol treatment, although they had been observed in the hospital for many years.

As epileptic seizures in cases of dementia precox are extremely rare, the production of the spontaneous seizures was thought to be due to the metrazol therapy, metrazol being able to cause spontaneous convulsive seizures, possibly in the same manner as do absinth and lead.

In using metrazol in the treatment of functional psychoses, therefore, one should take into account the possibility of the production of spontaneous epileptic seizures even a long time after the cessation of treatment.

750 South State Street.

ABSTRACT OF DISCUSSION

DR. ROY R. GRINKER, Chicago: We should be grateful to the author for bringing the matter of late appearing defects following shock treatment to our attention. The evidence that has been gathered from electroencephalographic studies following shock treatment, whether by metrazol or electrically induced shock, is that the brain waves are pathologic for some time after treatment, showing a rhythm of three, four and six per second with large cusps of great amplitude and sometimes spike formations. It has been anticipated, as has been reported here, that many psychotic patients would eventually become epileptic through the use of shock therapy. It might be said that these individuals had the potentialities of developing epilepsy before treatment. It is unfortunate that brain waves were not taken before treatment so that they could be compared with those afterward. In my patients the curves were all normal before treatment. The statement might be made that in the schizophrenic psychoses the number of shocks given was usually far greater than in the depressions, and hence the excessive quantity may be responsible for the development of epileptic attacks. In my work I have found no correlation between the number of shocks and the characteristic abnormalities in the brain waves seen afterward. It is true that these waves gradually subside and the normal curve eventually returns. This problem brings us back again to the discussion of choice between rational therapy and the danger of long standing psychosis as against rapid relief of depression and anxiety with the signals attendant on varying damage to the brain. Does one wish to take a chance on producing rather severe brain damage or to wait in certain cases until the psychosis recedes and the patient becomes amenable to more rational psychotherapy? I cannot pass this opportunity to say that we are becoming less psychiatrists and more and more physical therapists. At one time I indicated that, with metrazol, psychiatrists hardly waited for the patient to take his clothes off before he was shocked, and now we learn from Dr. Myerson that it is not necessary to hospitalize a patient, that one can shock him in one's office, keep him there for an hour or two and then return him home. This I consider extremely dangerous, since before long such easily applied therapy will be appropriated by the inexpert and used promiscuously and indiscriminately. It is obvious that this method is less dangerous than lobotomy because recovery of memory does occur and electroencephalographic findings tend to return to normal. When one cuts the fiber pathways everything is gone and no regeneration of the central tissue is possible. After shock there is a possibility that the irritative effect of some of the acute lesions may disappear.

DR. ERICH LIEBERT, Elgin, Ill.: I only want to mention that in the last two months I have had 2 more cases in which spontaneous convulsions were observed after metrazol treatments had been given.

POIKILODERMA-LIKE CHANGES IN THE
SKIN FOLLOWING ARSPHEN-
AMINE DERMATITIS

REPORT OF TWO CASES

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For the past two years we have had under observation 2 patients with postarsphenamine dermatitis terminating in erythema, pigmentation, telangiectasia, atrophy and alopecia, a combination of symptoms which strikingly resembles those first described by Jacobi¹ at the German Dermatologic Congress in Berne in 1906 and named by him poikiloderma atrophicum vasculare. The body of literature on this subject is comparatively small, considering the fact that the disease has been known to the medical profession for thirty-five years. Since Jacobi's case approximately 160 others have been reported, most of them for confirmation of diagnosis before various local dermatologic societies. It is interesting to note that in only 4 of these cases was the poikiloderma or the poikiloderma-like changes in the skin regarded by the author as the sequels of a postarsphenamine dermatitis; these 4 all appeared in the foreign literature.

REVIEW OF THE LITERATURE

K. Pinter² reported the first case of this type before the Hungarian Dermatologic Society on Nov. 9, 1928. The patient, a woman aged 23, had received three series of neoarsphenamine injections, after each of which she had an attack of arsphenamine dermatitis. The first attack, which came on after she had received 4 Gm. of neoarsphenamine in 1926, subsided in about three months, leaving a brown pigmentation followed by telangiectasia, punctate hemorrhages, thinness of the skin and other appearances of poikiloderma.

Gruetz³ on Oct. 12, 1930 presented before the Society of Rhenish-Westphalian Dermatologists a woman of 40 whose skin showed poikiloderma-like changes which had followed a generalized arsphenamine dermatitis. There were numerous irregular pigmentations. The body and scalp hair had almost entirely disappeared. Histologic sections showed that there were pigment deposits in the papillary bodies and that the elastic fibers had changed into small, well defined bandlike zones parallel to the epidermis.

Grau Barberá⁴ cited the case of a man of 26 who was given eight injections of neoarsphenamine (totaling 4 Gm.) in treatment of a primary lesion. After the next to the last injection an itching, nonexudative, erythematous eruption was noted in the heavy folds of the skin of the elbows, axillas and knees. There was some desquamation. The patient was given two injections of a bismuth compound, after which the erythematous eruption became generalized and

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Read before the Section on Dermatology and Syphilology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Jacobi, R.: Fall zur Diagnose (Poikiloderma vasculare atrophicum), Verhandl. d. deutsch. dermat. Gesellsch., IX. Kongress 9: 321, 1907.

2. Pinter, K.: Poikiloderma atrophicum vasculare und Salvarsan-dermatitis, Zentralbl. f. Haut- u. Geschlechtskr. 29: 495, 1929.

3. Gruetz, O.: Poikilodermaartige Folgezustand nach universeller Salvarsandermatitis, Zentralbl. f. Haut- u. Geschlechtskr. 36: 722, 1931.

4. Grau Barberá, M.: Contribución al estudio de los poikilodermas: un caso de poikiloderma secundaria, Ars med., Barcelona 9: 329, 1933.

persisted for five months, with itching and abundant desquamation accompanied by slight loss of hairs from the eyebrows. After the erythroderma had disappeared areas of reticular atrophy were seen, distributed over the whole body but most profusely over the skin of the abdomen, flanks, thighs and Scarpa's triangle. In the atrophic areas were islands of normal skin which were slightly hyperkeratotic and showed some purulent desquamation. The hyperkeratotic areas were more pigmented than the normal skin. The skin as a whole showed a slight wrinkling comparable to that found in patients with mild xeroderma. Finely branched telangiectases were found distributed regularly throughout. The anterior region showed pigmentation, with light reticulated hyperkeratosis. There was faint pigmentation in the inguinal folds and in places where the lesions were most abundant. The mucous membranes were also involved. Both clinically and histologically the patient presented the appearance of having poikiloderma.

Covisa and Bejarano⁵ reported the case of a woman aged 39 with a strongly positive Wassermann reaction who was given a total of 5 Gm. of neoarsphenamine and 2 Gm. of a bismuth compound. Before she received the next to the last injection of neoarsphenamine an erythematous eruption appeared, beginning in the flexure of the elbow and finally becoming generalized and exceedingly pruritic and exudative in type. The dermatitis gradually cleared, leaving a diffuse reticular eruption with alternate zones of erythema, pigmentation and atrophy, telangiectasia and in some places a furfuraceous desquamation.

Both the clinical and the histologic changes were consistent with those of classic poikiloderma as described by Jacobi.

Epstein's⁶ case, which he described as of an "unusual reticular fibroatrophyderma following arsphenamine dermatitis," might also be included here, since the changes which occurred are strongly reminiscent of poikiloderma, even though Epstein did not himself suggest any connection with that disease. After a course of neoarsphenamine injections the patient, a woman aged 41, had a typical generalized arsphenamine dermatitis which, when it subsided, left a peculiar atrophyderma over the portion of the neck which is exposed when a V-necked dress is worn. The skin over this area was thinned and inelastic. Numerous telangiectases were present. The surface was traversed by numerous keloid bands which intersected to form a network.

Histologic examination showed a thin epidermis, intracellular edema, fibrosis of the corium and some endarteritis. There were a few foci of round cells scattered throughout the cutis.

In these 4 instances of poikiloderma-like changes and the 1 of "atrophyderma" closely resembling poikiloderma the changes described occurred as a sequel to arsphenamine therapy. We found reported in the literature 4 other cases of poikiloderma-like changes, 3 of which were due to exposure of the skin to substances containing arsenic, while the fourth followed treatment with arsenic in a form other than arsphenamine.

Noguer-Moré and Grau Barberá⁷ described 3 cases of follicular pigmented exogenous toxicoderma occur-

ring in women engaged in occupations in which they came into contact with oily substances containing iron and arsenic, the parts of the skin affected being those which were directly exposed to the oily substances (hands, lower arms, face, neck and exposed parts of the chest). There was chronic or subacute inflammation around the skin follicles, with some tendency to hyperkeratoses and with hyperpigmentation or hypere-mic pigmented macules in uneven distribution. The pigment was partly clumped and partly arranged in a network. No atrophy was observed.

Von Leszczynski⁸ found poikiloderma-like symptoms in a man aged 35 who had received sixty-eight injections of an arsenical during the period 1916 to 1917 and more of the drug (in quantities not stated) from 1919 to 1920 for alleged pityriasis rubra; his skin showed changes typical of Jacobi's poikiloderma after exposure to wet and cold and, subsequently, to an explosion. Von Leszczynski expressed the opinion that the combination of shocks caused a later pituitary disease (insufficiency) and probably led also to the development of the cutaneous condition. He did not attempt to incriminate the arsenical in the causation of the condition, but it probably was of much more actual importance than the shocks which he stressed.

Nobl⁹ in 1935 gave an excellent comprehensive discussion of poikiloderma due to arsphenamine, but he did not cite any cases.

Only a comparatively small number of papers on the subject have found their way into print. In the American literature they have been particularly few, only eight articles (by Lane,¹⁰ Bowman and Clark,¹¹ Usher,¹² Taussig,¹³ Oliver,¹⁴ Keil,¹⁵ Guy, Grauer and Jacob¹⁶ and Hazel¹⁷) having appeared on the subject since Lane^{17a} introduced the first American case before the New York Dermatological Society on May 25, 1920. In view, therefore, of the comparative scarcity of reported cases of poikiloderma or poikiloderma-like changes following arsphenamine dermatitis we felt that it would be of interest to present our 2 cases, in which arsenic seemed definitely to be the active agent in the production of the cutaneous changes observed.

REPORT OF CASES

CASE 1.—G. V., a Puerto Rican woman aged 32, was admitted to the Vanderbilt Clinic in April 1937 with a generalized eruption and total alopecia of two years' duration.

The patient remembered no childhood diseases. Menstruation started at the age of 12 and was always regular and normal. She was married at 18 and had one child, aged 12 years, living and well. There had been one accidental abortion. At the time of the patient's admission to the clinic her husband was being treated in a tuberculosis sanatorium. (He died in 1938.)

8 von Leszczynski, R.: Zur Pathogenese der Poikilodermie (Jacobi), *Dermat. Wehnschr.* 54: 321 (March 5) 1927.

9 Nobl, G.: Salvarsanbedingte Poikilodermien, *Wien. med. Wehnschr.* 5: 1050 (Sept. 21) 1935.

10 Lane, J. E.: Case for Diagnosis (Poikiloderma Atrophicum Vasculare), *Arch. Dermat. & Syph.* 2: 253 (Aug.) 1920; Poikiloderma Atrophicum Vasculare with Report of Case by Oliver S. Ormsby, *ibid.* 4: 563 (Nov.) 1921.

11 Bowman, K. M., and Clark, E. C.: Case of Poikiloderma Atrophicum Vasculare, *Arch. Dermat. & Syph.* 15: 583 (May) 1927.

12 Usher, B. D.: Poikiloderma Atrophicum Vasculare: Report of Case, *Arch. Dermat. & Syph.* 25: 683 (April) 1932.

13 Taussig, Lawrence: Poikiloderma Atrophicum Vasculare, Jacobi: Report of Case with Review of Recent Literature, *Arch. Dermat. & Syph.* 25: 882 (May) 1932.

14 Oliver, E. A.: Mycosis Fungoides with Poikiloderma-Like Symptoms, *Arch. Dermat. & Syph.* 33: 267 (Feb.) 1936.

15 Keil, Harry: Parapsoriasis en Plaques and Incipient Mycosis Fungoides, *Arch. Dermat. & Syph.* 38: 545 (Oct.) 1938.

16 Guy, W. H., Grauer, R. C., and Jacob, F. M.: Poikilodermatomyitis, *Arch. Dermat. & Syph.* 40: 867 (Dec.) 1939.

17 Hazel, O. G.: Poikiloderma Atrophicum Vasculare: Report of Case, *Arch. Dermat. & Syph.* 40: 776 (Nov.) 1939.

17a Footnote 10, second reference.

5. Covisa, J. S., and Bejarano, J.: Poikiloderma vascular atrofiante consecutiva a eritrodermia salvarsanico *Actas dermatof.* 25: 233, 1933.

6. Epstein, Ervin: Unusual Reticular Fibroatrophyderma Following Arsphenamine Dermatitis, *Arch. Dermat. & Syph.* 37: 987 (June) 1938.

7. Noguer-Moré, S., and Grau Barberá, M.: Contribution à l'étude des poikilodermies; à propos de trois cas de toxicodermie folliculaire et pigmentaire d'origine exogene, *Ann. de dermat.* 5: 379, 1934.

Her first admission was to the obstetric department of a hospital because of pregnancy in November 1936, at which time a routine Wassermann test gave a strongly positive result (4 plus). She denied that she had had any initial or secondary syphilitic lesions. After she had received eight intravenous injections of neoarsphenamine and three intramuscular injections



Fig. 1 (case 1).—Extensive pigmentation, areas of depigmentation, atrophy, telangiectasia, especially of the cheeks, and extensive alopecia.

tions of a bismuth compound she had a generalized exfoliative dermatitis. In January 1936 she was referred to the gynecologic department because of a suspected abortion. Roentgenographic examination in April 1936 revealed the presence of a 6 month fetus. It could not be determined by roentgenogram whether the fetus was viable, although, because of the overlapping of the small bones and the distortion of the head, it was assumed that it was not. The patient, however, refused to allow the uterus to be evacuated.

At that time the skin showed little exfoliation, but there was a generalized thickening, with a papular eruption and almost total alopecia, and the skin had become much darker.

In February 1937 she visited one of the board of health clinics to continue antisyphilitic treatment, her chief complaint being impaired vision and excessive lacrimation. She was given five injections of sodium thiosulfate and was then transferred to the Vanderbilt Clinic.

Physical examination on admission to the clinic showed that she was well developed and fairly well nourished, weighing 110 pounds (499 Kg). The general physical examination revealed no pathologic changes except enlarged and cryptic tonsils. The eyes were essentially normal, the fundi healthy and the media clear, and there was no evidence of cataract. The neurologic examination was noncontributory.

The entire skin presented a remarkable picture of extensive deep brown to black mottled, pigmented areas, together with a fine network of telangiectatic blood vessels, atrophy and total alopecia (fig. 1). The skin over the face, neck, chest and scalp was more atrophic than that of the other parts and had a decidedly reticulated appearance, with numerous small

capillaries which appeared to be covered only by the thinned, atrophic, wrinkled skin. Over the skin of the abdomen near the umbilicus and on the upper posterior aspect of the right arm there were a number of pea-sized, papular, verrucous lesions. There was severe hyperkeratosis of the soles and heels and the sides of the great toes. A pea-sized cutaneous horn projected over the right eyebrow. The mucous membranes of the cheeks and the tongue showed extensive areas of leukoplakia and light brown to bluish pigmentation. The nails were not involved. Perspiration was not noticeable anywhere except on the palms and soles.

The blood count, examination of the urine, chemical examination of the blood and Aschheim-Zondek rabbit test all gave results within normal limits.

The arsenic content of the blood, determined at various intervals from 1937 to 1941, ranged from 0.005 to 0.21 mg per hundred grams of dry blood. The skin showed 0.003 mg. of arsenic per hundred grams of dried specimen. The arsenic content of the urine measured at one time 0.03 mg and on another occasion 0.08 mg. in a twenty-four hour specimen (670 cc.)

Spectrographic examination of the skin showed the presence of sodium, magnesium and iron, but no abnormal metallic constituents were noted.

Serologic tests of both blood and spinal fluid gave negative results.

The first intradermal test with old arsphenamine, which was made in April 1937, one year after the first appearance of the exfoliative dermatitis, produced erythema with infiltration and scaling within two weeks. After a month a nodule was formed and the erythema and scaling disappeared. The second test, made in 1940, four years after the development of the dermatitis, produced a 2 to 3 cm. area of dermatitis with a 1 cm. papule in the center.

Patch tests with old arsphenamine, made in 1938, gave negative results.

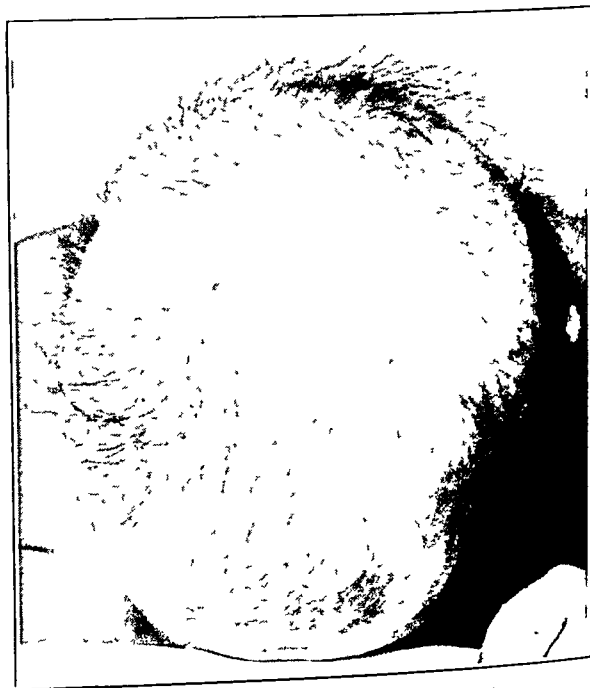


Fig. 2 (case 2).—Partial alopecia of the scalp.

Roentgenograms of the skull showed no abnormalities except calcification of the pineal body.

Histologic examination of a section from the abdomen showed severe hyperkeratosis. The epidermis showed some areas of atrophy and others of acanthosis. The corium was edematous and vascular and was the site of a chronic inflammation. Numerous chromatophores were seen. The histologic diag-

nosis was atrophy of the skin with keratosis and melanodermitis.

Another specimen of tissue consisted of a keratotic plug resting in an epidermal invagination. Beneath this plug the epidermis had undergone acanthosis. No malignant changes were noted. There were evidences of dyskeratosis and some changes in the granular layer, such as occur frequently in patients with verruca vulgaris. In the area of greatest change the melanin pigment had disappeared. The adjacent epidermis,

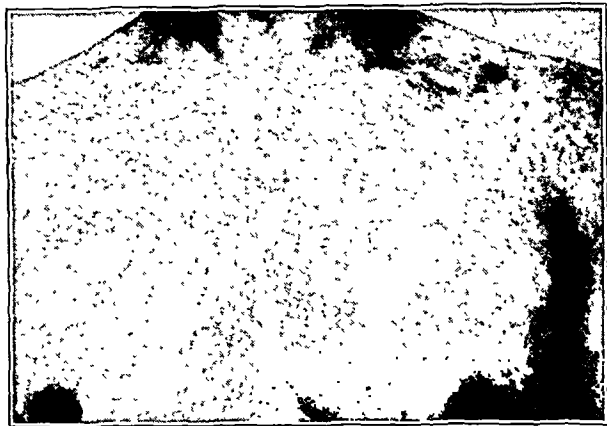


Fig. 3 (case 2).—Pigmentation, depigmentation, telangiectasia and atrophy of the chest.

however, was hyperpigmented. The corium beneath the lesion was the site of definite though not extreme chronic inflammation. The histologic diagnosis was arsenical keratosis.

From April 1937 to June 1940 the patient has received forty-two injections of sodium thiosulfate and twenty injections of bismo-cymol. She has also received liver extract, vitamin preparations and constitutional therapy as indicated.

Since she first came under observation in May 1937 her progress has been slow but gradual. The skin has become softer, and there is a sparse growth of hair in the occipital, axillary and suprapubic regions, but the other parts of the body are still entirely without hair. By June 1937 the hyperkeratotic plaques on the soles had cleared up and the skin had become lighter. In September the skin over the chest, back and arms had lost its reticulated appearance, the dark spots had entirely disappeared, the telangiectasia over the face was much less prominent than before and the scanty growth of hair on the parietal areas of the skull had improved. Black, pigmented, macular spots were still present on the thighs and buttocks. The leukoplakia of the tongue and the buccal mucous membranes had almost disappeared. By December 1937 the patient's eyesight had improved so much that she could read small print. About that time the verrucous lesions on the right arm and the left ear fell off spontaneously. In March 1938 the patient noticed that she perspired somewhat more freely than she had before. In May she underwent an operation for the removal of the fetus, which had been retained for more than two years. After operation her general health improved a great deal. In June the keratosis on the feet cleared up, but the verruca on the ear grew back. By November 1939 she had gained 10 pounds (4.5 Kg.) and felt and looked much better. The skin had become smoother and was of more normal color and texture, the atrophy was much less noticeable, and the veins on the face and chest were not so raised as before. In June 1940 new verrucous lesions appeared on the left arm, and a dark brown scaly plaque was seen on the upper portion of the left eyelid. At present the patient is feeling well. The skin on the body and the extremities is much softer and has lost practically all its spotted appearance. The growth of hair over the occipital portion of the skull is somewhat improved, although the rest of the skull is so nearly bald that the patient has to wear a wig. Her main complaint now is that because of her deficient perspiration she is unable to tolerate hot weather well.

CASE 2.—E. A., a German man aged 37, an automobile mechanic, was admitted to the Vanderbilt Clinic on Dec. 13, 1939 with a generalized eruption and alopecia of two years' duration.

The personal and family histories were noncontributory.

The patient had had none of the usual infectious diseases of childhood except a "lung catarrh." Eighteen years before, while he was in Brazil, he had had several attacks of herpes progenitalis, for which he had received only local treatment. He denied having had any sexual contacts at the time. In 1928 he had a recurrence of the herpetic lesions on the prepuce after intercourse. Two years later he received several injections of an unknown drug for "rheumatism." In December 1937 the blood showed a slightly positive Wassermann reaction, and he was given three intramuscular injections of a bismuth compound and three intravenous injections of neoarsphenamine. After the third injection of neoarsphenamine he had a severe generalized dermatitis for which he was treated with six intravenous injections of a strontium bromide preparation, without any improvement. The eruption became more severe and was accompanied by a great deal of oozing and swelling, particularly on the face, scalp and legs and around the eyes. In September 1938 the patient consulted another physician, who diagnosed his condition as a "generalized exfoliative arsphenamine dermatitis of the severest type." He was given calcium gluconate in fairly large doses and a soothing ointment (type unknown). He received also four fractional doses of roentgen rays (100 r each) on his arms, wrists and hands.

Physical examination on admission revealed that the patient was well nourished, unusually well developed and muscular and weighed about 155 pounds (70.3 Kg.). The general physical and neurologic examination gave essentially irrelevant results, except to reveal a soft systolic murmur at the apex of the heart, not transmitted.

Examination of the skin showed generalized erythroderma, with partial alopecia of the scalp, eyelids and axillary and pubic regions (fig. 2). The skin of the entire body was dry and except on the hands and feet had a bluish red tinge. Across the chest it was reticulated and mottled, in some places showing a purplish and in others a brown pigmentation (fig. 3). The skin was atrophic and wrinkled, with a fine network of



Fig. 4 (case 2).—Section stained with hematoxylin and eosin, showing atrophy of the epidermis, loss of rete pegs and variation in the melanin content of the basal layer. Note the zonal edema, increased vascularity, moderate infiltration of mononuclear cells and scattered chromatophores in the upper layers of the cutis ($\times 140$).

telangiectatic blood vessels which gave a depressed appearance to certain areas. Numerous warty lesions were found in the axillas, on the thighs and on the lower part of the abdomen. There was severe hyperkeratosis of the palms and soles, and the buccal mucous membranes were spotted with leukoplakic areas and streaks. The scalp was atrophic and telangiectatic. Perspiration was noted on the face, hands, feet and knees only. The nails were not involved.

The blood count, chemical examination of the blood, urinalysis and Wassermann examination of the blood all gave results within normal limits.

Determinations of the arsenic content showed 0.055 mg. per hundred grams of dry blood, 0.008 mg. per hundred grams of dry skin, 0.045 mg. per hundred grams of dry stool (23.7 per cent solids) and 0.1 mg. in a twenty-four hour specimen of urine (1,470 cc.).

Coproporphyrin in a twenty-four hour specimen of urine (1,470 cc.) measured 0.01 mg.

Spectrographic examination of the skin showed no gold or bismuth present but showed silver, 0.0008 mg. per gram of dry tissue and 0.0003 mg. per gram of tissue as received.

Intradermal tests with neoarsphenamine made three years after the development of the dermatitis produced erythema and scaling within two days, a definite area of dermatitis after two weeks and in about a month a nodule which two months later had not yet become involuted.

Patch tests with various types of automobile greases and oils gave negative results.

Roentgenographic examination of the chest showed no abnormalities. Stereoroentgenograms of the skull revealed slight calcification of the frontal bone and calcification of the pineal body. The sella turcica and the rest of the skull were normal.

Histologic examination of a section from the abdomen showed that the epidermis was severely atrophic in some places. There was decided hyperkeratosis. The granular layer was extremely thin, being for the most part represented by a single line of cells. There was severe edema throughout. The melanin content of the basal cell layer varied greatly (fig. 4). The underlying corium was extremely edematous. The vascular channels were increased in number. There was a considerable increase in spindle-shaped cells. A moderate inflammatory reaction could be seen. These changes were most striking in the corium just beneath the epidermis. The deeper portions of the corium, however, were relatively free from pathologic change. Large numbers of chromatophores were found in the areas in which the melanin of the basal layers was most depleted. The elastic fibers of the superficial portions of the corium showed advanced disintegration (fig. 5). Sections stained by Fontana's method brought out strikingly the great variation in quantity of melanin in the epidermis and in the number of chromatophores within the corium (fig. 6). The histologic diagnosis was arsenical keratosis.

Histologic examination of a warty lesion from the left thigh disclosed that the skin in that region had undergone extensive

the corium by a mass of epithelial cells. The cutis was the site of a severe inflammatory reaction, with dilated blood vessels, infiltration of lymphocytes and plasma cells and proliferation of fibroblasts. Melanin, which was conspicuous in the basal layer of the uninvolved epidermis, had disappeared entirely from the verrucous epidermis. The lesion was evidently a keratosis with characteristics of verruca vulgaris.



Fig. 6 (case 2).—Section stained by the Fontana method, showing variation in the quantity of melanin ($\times 188$).

From January to November 1940 the patient received thirty-five intravenous injections of sodium thiosulfate. At present the skin is softer, and the keratotic lesions on the abdomen and the left thigh have become smaller and somewhat involuted. The alopecia, atrophy and telangiectasia are still present, but they are all much less noticeable than when the patient was first seen. There is only a slight pigmentation present in widely scattered areas. The patient's general health is good.

COMMENT

The 2 cases of poikiloderma-like changes in the skin presented here are identical as to the history and development of the dermatitis, the main difference being in its degree. In both an acute inflammatory exudative dermatitis appeared after arsphenamine treatment for syphilis. The symptoms of this dermatitis corresponded in every respect to those of an arsenical dermatitis, and the condition was so diagnosed and the patient so treated. Instead, however, of the dermatitis disappearing in the course of time, leaving no after-effects, as an arsphenamine dermatitis usually does, the skin sustained apparently permanent damage, becoming extensively pigmented and showing both light and darker colored patches of diffuse atrophy mingled with a dark red network of telangiectatic blood vessels which stood out prominently, giving the entire skin a reticulated and marmorated appearance. The skin within the network was wrinkled, thin and atrophic. There was well defined thickening of the skin of the palms and soles, especially around the heels and the great toes. On the abdomen, the upper arms and the anterior axillary folds there were pea-sized dark brown papillomatous growths.

The mucous membranes of the mouth and tongue in both cases showed widespread leukoplakic streaks or lines, a condition frequently found in greater or less degree in cases of chronic arsenic poisoning.

One of the most striking features in both patients was the alopecia, which was total in the more severely affected one (G. V.) and was accompanied by a decided atrophy of the scalp, particularly over the vertex. The alopecia in the man (E. A.) was only partial, there being a few thin clusters of hair scattered over the scalp, eyebrows and eyelashes and the axillary and suprapubic regions. Undoubtedly the alopecia can be

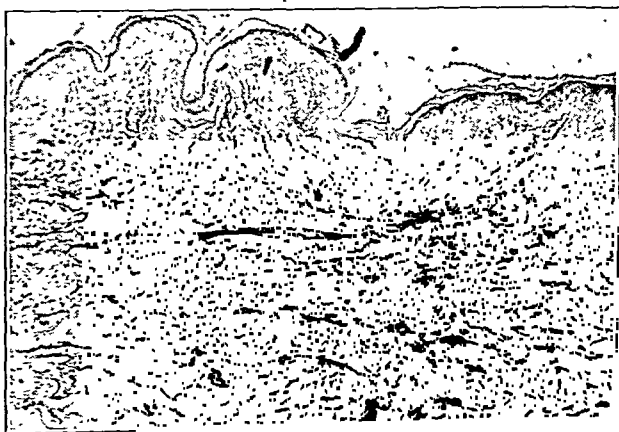


Fig. 5 (case 2).—Section stained by the Taenzer-Unna orcein method, showing disintegration and disappearance of elastic fibers in the upper layers of the cutis as a result of inflammatory changes ($\times 140$).

hyperkeratosis and acanthosis. There was only slight parakeratosis, particularly evident over the outward projections of the epidermis. The granular layer had increased remarkably in width. Many of the granules had a coarseness such as is seen in cases of verruca vulgaris, and the individual cells were somewhat swollen. This striking change was most pronounced in places where the acanthosis had resulted in penetration of

explained by the atrophy of the scalp. Hence it too may be regarded as more or less permanent. That it actually is may be seen from the fact that although more than four years have elapsed since alopecia developed in the first patient (G. V.), the scalp is still almost totally bald, except around the occipital region, and the vertical portion still presents a smooth, shiny, light to whitish, atrophic appearance. The body hair, too, shows only a sparse growth. The alopecia of the second patient (E. A.) is also apparently permanent, although recently he reported that hair is beginning to grow on the forearms.

Of the numerous laboratory studies made of these 2 patients only two or three need to be mentioned. The arsenic content of the blood, urine and skin was for the most part normal or high normal, only one of the several determinations made giving results at all high (0.21 mg. in the blood, in case 1). The comparatively normal figures for arsenic can probably be explained by the fact that a long interval (more than two years in each case) had elapsed between the institution of arsphenamine therapy and our arsenic determinations, so that there was ample time for most of the arsenic to be eliminated by the organism.

Roentgenograms of the skull showed slight calcification of the frontal bone in 1 patient (E. A.) and calcification of the pineal gland in both patients. We have been able to find only 1 other instance of calcification of the pineal gland in a patient with poikiloderma, namely that reported by Montgomery and O'Leary¹⁸ before the Chicago Dermatological Society on Oct. 21, 1931. Whether or not this condition has any significance in cases of poikiloderma or poikiloderma-like changes in the skin we are not prepared to say, but in view of its rarity we feel that its presence in both our patients is interesting. The calcium-phosphorus ratio of the blood of both patients was entirely within normal limits, and no other evidences of calcification were revealed by either clinical or laboratory examination.

Treatment of both patients prior to admission to the Vanderbilt Clinic had consisted mainly in attempts to eliminate arsenic by means of calcium and sodium thiosulfate injections and the use of soothing applications. Our treatment consisted of calcium and sodium thiosulfate injections, use of a high caloric diet, administration of vitamins by mouth and for 1 patient (G. V.) removal of the petrified fetus. While the skin of both patients has shown a gradual if slow improvement, the atrophy remains, together with some telangiectasia; in both there is alopecia, almost total in the woman and partial in the man. The pigmentation has almost entirely disappeared, and the skin has practically regained its normal color. However, even though the skin may continue to improve it is probable that the atrophy and alopecia are permanent.

When we consider the clinical features of our 2 cases of postarsphenamine dermatitis—the atrophy, telangiectasia and pigmentation, the marmorated and reticulated appearance of the skin, the alopecia and the symptoms of general weakness and muscular pain—and compare them with those in the case of poikiloderma atrophicans vasculare described under that name for the first time by Jacobi¹ in 1906, we are immediately impressed by the clinical similarity of the 3 cases. Histologically, too, our 2 cases bear a close resemblance to Jacobi's,

in which the main features were atrophy and hyperkeratosis of the epidermis; interstitial and parenchymatous edema and infiltration, chiefly perivascular in type; decided thinning of the granular layer; pigmentation scattered through the upper cutis, varying to a decided degree in different locations, and severe disintegration and deficiency of the elastic tissue in the superficial portions of the corium. Unlike Jacobi's case, however, in our cases there was a definite history of arsenic intake, and the dermatitis which initiated the present poikiloderma-like changes had all the characteristics of typical arsenical dermatitis. The histologic changes too suggest an arsenical keratosis.

Another feature of our cases which should be noted is that both the patients had a history of an earlier toxic condition: The first patient (G. V.) had undergone a pregnancy with subsequent retention of the fetus in the first three years of observation, while the other (E. A.) had a history of "rheumatism" which was treated by three injections of some unknown drug. The question therefore presents itself whether some other factor, perhaps a toxic one, may not have played a part along with the arsphenamine in causing the remarkable cutaneous changes or whether we are justified in assuming that these changes resulted from the arsphenamine alone. The toxic origin of poikiloderma and poikiloderma-like changes has been suggested before. It will be remembered that Ehrmann¹⁹ in discussing Jacobi's first case suggested the possibility that the condition might be a toxic erythroderma; and there have been various other authors since who have favored the theory of a toxic origin. The question of the relative responsibility of toxic conditions and a previous arsenic intake for the development of the poikiloderma-like changes in our cases is a debatable one. Certainly although arsphenamine dermatitis itself occurs commonly, poikiloderma-like changes following it are comparatively rare, an assertion that is substantiated by the limited number of such cases reported in the literature. Hence it would seem logical to believe that it is the arsphenamine rather than the toxic factors which should be incriminated in the 2 cases reported here, though it is entirely possible that toxic conditions may also have contributed, secondarily, to the development of the poikiloderma-like changes.

Jacobi of course thought that the disease which he described was an entity distinct from any other disease described hitherto. While our cases bear a strong resemblance to the one reported by Jacobi, we feel that the changes do not represent a type *sui generis* but were due to an exogenous factor, namely arsphenamine. It will be remembered that Oppenheim,²⁰ in his masterly discussion of poikiloderma in Jadassohn's "Handbuch," remarked that this disease falls into three types: (1) the purely cutaneous type (Jacobi), (2) the congenital, neviform type (Zinsser) and (3) the type in which the poikiloderma is the end result of other, earlier cutaneous diseases, e. g. lupus erythematosus, melanoderma, lymphosarcoma, mycosis fungoides, leukemia cutis or arsphenamine dermatitis. While our cases, as we have said, show striking similarities both clinically and histologically to Jacobi's original case, etiologically they undoubtedly are of the third type mentioned by Oppenheim, since the changes seem definitely to be the end result of a postarsphenamine dermatitis.

18. Montgomery, Hamilton, and O'Leary, P. A.: Poikiloderma atrophicans vasculare (Jacobi)? Arch. Dermat. & Syph. 25: 942 (May) 1932.

19. Ehrmann, in discussion on Jacobi's case: Verhandl. d. deutsch. dermat. Gesellsch., IX. Kongress 9: 321, 1907.

20. Oppenheim, Moriz, in Jadassohn, Josef: Handb. der Haut- u. Geschlechtskrankheiten, Berlin, Julius Springer, 1931, vol. 8, pt. 2, p. 635.

The question then arises: What is poikiloderma? From a review of the literature and from observation of our 2 cases of postarsenical poikiloderma-like changes it seems clear that there is in reality only one true type of poikiloderma, that originally described by Jacobi, the other types being merely variations of it, namely either the congenital, neviform type described by Zinsser or poikiloderma-like changes found in some other cutaneous disease either at the time the original disease is first observed or at some subsequent period during its course. One wonders whether if Jacobi had examined his patient for arsenic or if he had followed him over a long period he too might not have been able to classify the condition as being due to a postarsphenamine dermatitis, to a disease of the lymphoblastoma group or to some other disease in which poikiloderma-like changes occur as the result of a preceding dermatosis. On the basis of present knowledge of poikiloderma, meager though it is, one must assume that it is a symptom rather than a clinical entity, for while the term poikiloderma atrophicans vasculare is a valid descriptive one it gives no characteristic etiologic or pathologic picture to aid one in diagnosing the condition. In the last analysis we can say only that poikiloderma is a clinical descriptive term applied to a condition the main features of which are redness, telangiectasia, pigmentation and atrophy and which may be due to any one of a variety of causes.

SUMMARY

In 2 cases a postarsphenamine dermatitis ended in erythema, pigmentation, atrophy, telangiectasia and alopecia. The cutaneous symptoms presented by the patients were practically identical with those first described and named poikiloderma atrophicans vasculare by Jacobi.

CONCLUSIONS

1. Arsphenamine alone or a combination of arsphenamine and toxic factors is capable of causing poikiloderma or poikiloderma-like changes in the skin which are similar, both clinically and histologically, to Jacobi's poikiloderma atrophicans vasculare.

2. These poikiloderma-like changes result in permanent damage to the skin, the condition sometimes improving but never being completely cured.

One Hundred and Sixty-Eighth Street and Broadway.

ABSTRACT OF DISCUSSION

DR. CLYDE L. CUMMER, Cleveland: The authors' recounting of 4 cases of poikiloderma-like changes in the skin supplemented by the report of 2 observed by them establishes two points: first, that such changes may follow severe arsenical dermatitis and, second, that in seeing poikiloderma one must have in mind the possibility of an arsenical background. I have seen no such cases in the clinic where my associates and I do give a great deal of arsenical treatment, although I have to add that we have seen even less arsphenamine dermatitis or arsenical dermatitis since mapharsen has been employed. However, all have seen arsenical alopecia, I think, and a certain amount of pigmentation following exfoliative dermatitis, but not with telangiectasia. The authors' cases appear to correspond clinically and histologically to Jacobi's original report. I would like to have Dr. Cannon go into more detail, if possible, about the vitamin therapy. In the first case, as I understood, vitamins were used, but the great improvement came with the removal of the fetus. In the second case apparently vitamins had been used without any other particular factor which could be credited, and in both instances there was considerable improvement in the clinical result. I am interested in that because the statement of Dr. Cannon and his co-authors did not tell what type of vitamin therapy had been used. Dr. Duffy, of Memorial Hospital in

New York, informed me that good results had been obtained by some of his confrères who had radiodermatitis of the fingers by using vitamin B, I think the complex, plus liver extract. I tried it on 1 patient with a severe radiodermatitis and was surprised to obtain distinct improvement, with lessening of the atrophy and apparently some clearing of the telangiectasia. I wonder whether or not Dr. Cannon and his co-workers could fit in the improvement with vitamins. As to their conclusions, I think we shall all be in accord.

DR. JOHN E. RAUSCHKOLB, Cleveland: According to Oppenheim's concept of the poikilodermas, they are etiologically one of three kinds: (a) local type as in Jacobi's original case, (b) congenital or nevroid type and (c) vasculotoxic type. In considering the vasculotoxic type under which this case report falls, three theories have evolved: First, according to Milian's view of biotropism, activating micro-organisms, are present in the human host through the power possessed by potent drugs injected into the circulation, producing inflammation of these various foci of infections in the skin; second, it could be a manifestation of sensitivity or true allergy in and around the vascular loops of the skin in support of Sulzberger's theory, or, third, it can be true drug intoxication of the peripheral cutaneous circulation whose concept we know as Osborne's. In support of Osborne's work we know that the trivalent organic arsenicals locate perivascularly and produce inflammation and sclerosis of the vessels with resultant atrophy and the poikiloderma or variegated color changes along with telangiectasia so typical in postarsenical dermatitis. I am more or less in accord with the authors and with Dr. Cummer, that we have here in these 2 cases reported at least a clinical picture produced by the intravenous injection of trivalent organic arsenicals with poikiloderma-like changes. In Jacobi's original case and also in some 120 cases that have been reported since then, these atrophic cutaneous changes have been insidiously progressive with no relationship to arsenic. Perhaps the therapy that has been instituted in the authors' cases of high vitamin content diet and liver extract is the reason why they have been able to change an atrophic cutaneous pathologic condition to one of a normal picture. Probably this therapy may prove of value in the true Jacobi type of poikiloderma.

DR. MAURICE OPPENHEIM, Chicago: In my article on Atrophy of the Skin in the handbook published by Jadassohn I take the position that poikiloderma atrophicans vasculare Jacobi should not be considered any more a real clinical and histologic entity. One part of the cases of poikiloderma atrophicans vasculare Jacobi is dermatitis atrophicans progressiva. Another part, like the cases of Petges and Clezat on the neck, are partly lupus erythematosus or partly caused by local influences. The third group—and to this group belong the 2 referred cases—are secondary changes of the skin caused by other skin diseases as lichen planus or by medication. In the Viennese Dermatological Society I presented several cases, in which such local or general influences were the cause of a typical clinical and histologic picture of poikiloderma atrophicans vasculare Jacobi. Therefore I believe that we must not complicate our science by introducing new clinical pictures. If one studies the dermatitis atrophicans group, as dermatitis atrophicans cutis idiopathica progressiva, one learns that Jacobi reported in 1906 a case of the later stages of dermatitis atrophicans progressiva. In this stage one finds the telangiectasias and follicular keratosis, and histologically the degeneration of the elastic and connective tissue fibers is present as is seen in the wonderful histologic slides of Dr. Cannon and his collaborators. If one looks over one's cases of poikiloderma atrophicans vasculare Jacobi, one will observe that the poikiloderma atrophicans vasculare is not a new clinical entity as Jacobi meant.

DR. A. BENSON CANNON, New York: Dr. Oppenheim was my teacher for a brief time many years ago; I am happy to see that he has much the same idea with regard to this condition that I have tried to emphasize here. Dr. Cummer spoke of the vitamin therapy that was given to these patients. Undoubtedly it was the liver extract and the vitamin B, given both hypodermically and by mouth, that was responsible for the increased general health and well-being that resulted. Whether the improvement in the appearance of the cutaneous symptoms was due also to the medication received is rather difficult to

say. Of course, the most pronounced change took place in the woman patient, after the removal of a petrified fetus. She gained 10 pounds within a few weeks and felt and looked much better. I have an idea that if one cushions atrophic skin with an excessive amount of fat one will automatically have mechanical improvement in appearance, even though the histologic atrophy will still be present. Unfortunately the pictures shown here were not taken until about three and one-half years after the patients had their initial dermatitis. One can, I believe, say pretty definitely, though, that the skin still shows the same degree of atrophy, and the scalp the same amount of alopecia, as existed in the beginning. It is almost inconceivable that there will ever be a complete return to normality in these respects, no matter what we may do by way of treatment. We are forced to believe that, although there has been a decided improvement in the appearance and general health of both patients, the underlying histologic changes must be regarded as permanent. Five years have passed, and the woman patient still has to wear a wig and will probably always have to do so, while the atrophic areas in the skin of both patients are no less atrophic, nor are they likely to become so.

TREATMENT OF GONORRHEA AT FITZSIMONS GENERAL HOSPITAL

A STUDY OF CASES FROM SEPT. 1, 1938
TO OCT. 31, 1940

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AND

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Captain, Medical Corps, United States Army
DENVER

Our purpose in presenting this study of the results of treatment in 178 consecutive cases of gonorrhea treated during a period of twenty-six months is to report the results of newer methods of treatment and to set forth certain impressions gained from our experience on which a practicable treatment regimen can be based.

At Fitzsimons General Hospital from November 1935 to Nov. 1, 1940 the treatment of gonorrhea has been a responsibility of the Fever Therapy Department, and one of us (D. B. P.) has been in charge of this department since Sept. 1, 1938. During the period covered by this study the type of treatment has been changed from almost entirely fever therapy to almost entirely chemotherapy. Although the latter means of therapy has been carried out in another ward, all examinations of urethral and prostatic smears have been done in the Fever Therapy Department and the actual individual treatment of each patient has been dependent on the appearance of these smears.

Although all types of gonorrhea are included in this series, this report deals only with the results of treatment in the genitourinary infection.

The stain used is a modified Gram's stain, modified in that the smear is overstained with safranin, and decolorization is the final step in the process. This modification of the original Gram method of staining as used by the Fever Therapy Department, Fitzsimons General Hospital, is given in detail because adherence to this detail results in a clear, sharply stained smear,

of which the bacteria show the Gram characteristic, and the cellular elements show certain typical staining characteristics to be described later.

MODIFIED GRAM'S STAIN

Reagents:

1. Crystal violet, saturated alcoholic solution, 1 part; ammonium oxalate, 1 per cent aqueous solution, 4 parts.
2. Gram's iodine-potassium iodide: iodine 1 Gm., potassium iodide 2 Gm., distilled water 300 cc.
3. Counterstain: safranin, 1 per cent aqueous solution.
4. Decolorizer: 20 per cent acetone in 95 per cent alcohol.

Technic:

1. Apply crystal violet for one and one-half minutes, wash, blot and dry.
2. Treat with Gram's iodine for one and one-half minutes, wash, blot and dry.
3. Apply counterstain for three to four minutes, wash, blot and dry.
4. Decolorize with acetone-alcohol until no further traces of violet can be detected in the decolorizer, wash and dry.

Smears stained in this manner are shifted to the blue side so that the nuclei and cytoplasm of the pus cells are differentially stained.

All the patients who were the subjects of this report had urethral or prostatic smears containing gram-negative diplococci morphologically identical with gonococci, and "cures" reported relate only to this type of infection and not, for example, to the cure of any complicating arthritic process.

Since certain cases are said to be cured, a definition of the word "cured" is necessary. To be considered cured, of course the patient must be symptom free. The other essential is that the doctor must be convinced that the patient is cured. This conviction is based on examination of the urethral or prostatic smears microscopically. After three consecutive smears which show satisfactory improvement and are negative for gonococci are obtained, a sound is passed and 0.5 per cent silver nitrate is instilled. If, after this, three consecutive satisfactory smears are obtained, the patient is regarded as cured. Whether or not a certain smear is satisfactory is the crux of the whole situation.

Examination of the smears is done by the doctor himself, and, on the appearance of the smear, further treatment, change in treatment, discontinuance of treatment, as well as delay for further smear examination is determined. Here it must be stated that this delay is very important, because, although no gonococci can be found, it is frequently obvious to the examiner that the patient still has an active gonorrheal process. As will be noted in the accompanying photomicrographs, which were taken with a Wratten 25 filter over the light source, with healing there are very definite changes in the character of the cellular elements of the smear. The changes noted in healing are quantitative, qualitative and in color. Quantitatively the pus cells grow fewer and the gonococci disappear. Qualitatively the pus cells may become fragmented (especially after fever therapy) or may become more distinctly demarcated with pyknotic nuclei, later to undergo karyolysis. The general change in color of the pus cells is from entirely red cytoplasm and nuclei in the fresh case to very dark pyknotic nuclei with pale pink or lavender cytoplasm in the healing case. The changes described are the microscopic characteristics of cell necrosis. Karyorrhexis is seen especially after fever therapy, while after successful chemotherapy the slower changes of cell necrosis as typified by pyknosis and karyolysis and a

From the Medical Service, Fitzsimons General Hospital.

All photomicrographs were made on Eastman Spectroscopic Series S Type II plates with Wratten 25 filter on light source.

Members of the Laboratory Service, Fitzsimons General Hospital, made the photomicrographs and checked the staining technic described. The careful records of cases by the Medical Officers have made this report possible.

shift toward the blue staining side are characteristic. The implication of these changes is clear. If it can be assumed that the cellular exudate is in direct response to the presence of living gonococci and then if day by day that cellular exudate shows progressive cellular necrosis with the addition of no new, fresh pus cells,



Fig. 1 (case 1).—Urethral smear positive for gonococci, Oct. 21, 1938; $\times 1,000$.

it is evident that the exciting cause of the exudate no longer exists. The therapy itself may accelerate this cellular necrosis but will not prevent the influx of new cells except by therapeutic effect on the gonococci. On the other hand if, as may be expected from chemotherapy, these same necrotic changes are seen in a great majority of the pus cells yet there are found even a few new, fresh pus cells, it is evident that the exciting cause of the exudate is still present, though diminished. On this concept our criteria of cure and our indications for therapy rest. Our method of staining causes the characteristics of cell necrosis to become apparent, and the danger of overdecolorization is minimized. To the experienced examiner the appearance of the smear is indicative of the state of the patient's gonorrhea, and treatment is ordered accordingly. Certain patients have been kept in the hospital for many days and even weeks after the minimum number of smears have been negative for gonococci but have not been satisfactory otherwise, almost invariably to substantiate the examiner's belief that the patient was not cured. It is regrettable that the patients we regarded as cured were not checked by cultural methods. Thus it is that only 3 patients have been returned with further gonorrhea, each of these giving symptoms of acute new gonorrhea, history of exposure without prophylaxis, and symptom free periods for over six months. One of these was followed by monthly smear examination in fever therapy. Rightly or wrongly we believed these to be new infections.

Adequate treatment with the various agents to be described consists of:

- (a) Sulfanilamide: Eight Gm. a day for three days; 4 Gm. a day for five days.
- (b) Sulfapyridine: Thirteen Gm. the first day, then 1.5 Gm. a day for eight days.

(c) Fever Therapy: Nine hours of fever therapy at a rectal temperature of 106.8-107 F. given in such fashion that if more than one treatment is employed such treatments are not more than four days apart.

Such treatments with sulfanilamide and sulfapyridine as described may be considered as our routine, but in the last year, if the patient on an adequate sulfanilamide regimen did not show what was considered to be an adequate response in his smears by the fourth day, despite marked symptomatic improvement, he was immediately treated with sulfapyridine. In considering this amount of fever therapy adequate, we realize that for each case there is an amount of fever that will cure the gonorrhea, and it is only to have some point of departure that the amount stated is selected. Actually the minimum should be ten hours; if divided into treatments, they should be no further apart than on alternate days. If given further apart than this, we believe that the hours of fever cannot be regarded as cumulative therapeutically, and if given on succeeding days that the hours may be regarded as absolutely cumulative. If this belief is true, it explains why patients who have been given over fifty hours of fever therapy in weekly doses of about five or more hours remain positive for gonococci, whereas in these same patients two five hour treatments on successive days result in immediate cure.

RESULTS OF TREATMENT

A. *Sulfanilamide*.—1. Twenty-four patients were treated with sulfanilamide initially, received an average of 41 Gm. of the drug over an average of nine and four-tenths days and averaged twenty-seven and eight-tenths days from admission to clearance by fever therapy.



Fig. 2 (case 1).—One day after fever therapy, Nov. 4, 1938; $\times 1,000$.

2. Three patients, 2 after sulfapyridine reaction, 1 after fever therapy reaction, were given an average of 36.6 Gm. of sulfanilamide and averaged thirty-three and one-third days from admission to clearance.

3. Nineteen patients were treated with sulfanilamide initially, received an average of 39.1 Gm. of the drug over an average period of eight and four-tenths days, were also given urethral irrigations, and averaged fifty-

three and eight-tenths days to clearance. Most of these patients were given irrigations because the response to sulfanilamide therapy was inadequate.

4. Forty-eight patients treated initially with sulfanilamide averaged 200 Gm. of the drug, were sulfanilamide failures, and were treated by other means.



Fig. 3 (case 2).—One day after patient was started on a course of sulfanilamide, Oct. 14, 1938; \times 1,000.

Roughly 50 per cent of the patients treated by sulfanilamide initially can be considered to be cured by this drug.

B. *Sulfapyridine*.—1. Thirty-eight patients were treated with sulfapyridine initially, received an average of 24.5 Gm. of the drug over an average period of eight and seven-tenths days and were given clearance in an average of thirty and one-tenth days from admission.

2. Three patients had gross hematuria and renal colic after initial treatment with sulfapyridine with 10, 10 and 17 Gm. of the drug respectively and were treated by other means.

3. Twenty-four patients who had failed to show favorable response to, or to be cured by, adequate sulfanilamide therapy were given an average of 22.3 Gm. of sulfapyridine over an average period of seven and one-tenth days and were given clearance in an average of forty and eight-tenths days from admission.

4. Thirteen patients who had failed to be cured on adequate sulfanilamide therapy were given an average of 47 Gm. of sulfapyridine, failed to be cured by this drug and were treated by other means.

All of the 38 patients treated initially with sulfapyridine were cured by this drug.

C. *Fever Therapy*.—1. Forty-four patients received an average of one and eight-tenths fever treatments, with an average total of ten and seven-tenths hours at 106.8 to 107 F. and were cured of their gonorrhea.

2. Three patients received an average of two treatments with an average total of eleven and four-tenths hours and were not cured by this treatment. All three refused further fever therapy.

3. Fever therapy of 34 patients was attempted, but an adequate amount of fever could not be given because

of complications. Almost all of these patients had had previous unsuccessful sulfanilamide therapy.

D. *Additional Treatment*.—Twenty-three patients, of whom 12 had received adequate sulfanilamide therapy and 11 of whom had received both sulfanilamide and sulfapyridine therapy, were given such general treatment measures as irrigations, intravenous hydrochloric acid and the like and finally recovered after long hospitalization.

E. *Failures*.—Of the 178 patients treated, 3 were not cured of their gonorrhea.

The complications of treatment from sulfanilamide have been mainly febrile reactions, except for one severe case of agranulocytic angina and one bilateral sciatic neuritis. With sulfapyridine, 3 cases of gross hematuria with renal colic occurred. The complications of fever therapy occurring in those who have had sulfanilamide are at least five times as frequent and much more dangerous to life than in those who have not had sulfanilamide. The administration of oxygen is of great worth in these cases and in the event of complication is life saving. The chief complication is cerebral edema, which is thought due to anoxia of the brain tissue, which is in turn thought due to decreased oxygen carrying capacity of the blood. The altitude in Denver is no help, and when, as often occurs, the patient has been transferred to this hospital from a much lower altitude, the difficulties of administering fever therapy with safety are enormous. There were no deaths from complications.

ILLUSTRATIVE CASES

CASE 1.—Six and one-half hours of fever therapy were given on Nov. 3, 1938. The fever was terminated at that amount because of impending cerebral edema. As is our practice when a good start has been made on fever, the patient was prepared for another session the next morning, but a smear was taken just before his being placed in the Kettering hypertherm. Since he showed the good response illustrated in figure 2, this second session of course was not given. Finally,

the only cellular elements to be found were a few scattered epithelial cells. Most of the cells were necrosed by karyolysis, but in figure 2 karyorrhexis is evident.

CASE 2.—This illustrates an ideal response to sulfanilamide medication initially. In figure 3 is seen a very satisfactory smear response even though it is loaded with gonococci. The pus cells show a fragmenting, and no fresh cells are seen. Sulfanilamide

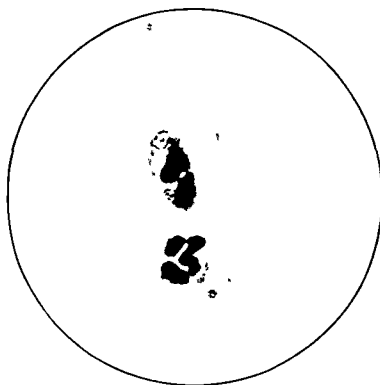


Fig. 4 (case 2).—Nine days after initial dose of sulfanilamide, Oct. 21, 1938; \times 1,000.

was started on Oct. 13, 1938. With the appearance of the smear in figure 3 one can be almost certain that this patient will be cured by sulfanilamide alone, and this excellent result, as seen in figure 4, is as expected.

CASE 3.—Repeated courses of sulfanilamide were administered, with a total in excess of 135 Gm. The prostatic smears were unsatisfactory; a small amount of fresh new pus cells occurring in clumps was continually in evidence. Figure 5 represents one of two such clumps found on the January 24 smear. Careful scrutiny of the January 24 smear revealed

one diplococcus, which was hardly diagnostic. Factually this diplococcus was interesting only, because it was otherwise evident that the patient required other treatment. After several abortive attempts at fever therapy which were abruptly and dramatically terminated by the cerebral edema which so often occurs in those who have had sulfanilamide, one ten hour



Fig. 5 (case 3)—Prostatic smear, Jan. 24, 1939. Note diplococcus, $\times 1,000$.

fever treatment was administered on Feb. 7, 1939. The response to fever therapy, as shown in figure 6, indicates that our belief that the patient was not cured by sulfanilamide was justified. Figure 6 is a low power photomicrograph of a smear that is made very thick to show the almost complete absence of cellular elements in the smear.



Fig. 6 (case 3).—Nine days after fever therapy, $\times 100$.

COMMENT

From studying and treating these 178 patients with gonorrhea we have gained certain impressions:

1. With sulfanilamide, about half the patients will show an immediate adequate response and will be cured. The other half will show an inadequate response,

although there will be great clinical improvement, and these patients should be treated by other means.

2. With sulfapyridine it appears that the immediate adequate response is greater than with sulfanilamide. Sulfapyridine therapy in sulfanilamide resistant cases is very efficacious. In gonorrheal epididymitis and arthritis the response to sulfapyridine therapy is much better than to sulfanilamide.

3. Fever therapy is the most efficacious treatment for gonorrhea but has definite disadvantages in that the treatment is expensive and of danger to the patient. The danger is increased by the previous medication with sulfanilamide, especially since now almost all patients have been so treated before they reach a hospital where fever therapy is available. Fever is of course the standard of good treatment in gonorrheal arthritis. We have had as good therapeutic results with fever therapy by giving eight and a half hours of fever to patients with chronic gonorrhea as with giving ten hours of fever to patients with acute gonorrhea. It has been our habit to give our fever patients a one hour trial treatment. In most cases this has been done on the day before the ten hour treatment, so that a total of eleven hours actually has been given. It is our experience, and thought to be important therapeutically, that if fever therapy for gonorrhea is given in more than one session these sessions should be no further apart than on alternate days.

4. Patients who do not show an adequate response to initial sulfanilamide therapy by the fourth day should be given either fever therapy or sulfapyridine because their chance of attaining a cure from sulfanilamide is not good, hospitalization is increased and the adverse effects of long continued sulfanilamide administration are courted without, in our opinion, therapeutic justification.

5. Estimating the progress of the case to determine effects of therapy, necessity for change in therapy and the time when cure is effected can practically be accomplished by evaluation of the smear if the doctor in charge of treatment for gonorrhea (a) is in control of the staining of urethral and prostatic smears, (b) familiarizes himself with the microscopic appearance of necrosing pus cells and (c) examines the smears himself. A report of "negative for gonococci" from a laboratory, whether by smear or by culture, means nothing as far as aiding in treatment is concerned. But very specific inferences as to the state of the gonorrheal infection may be drawn from estimating the degree of necrosis in the pus cells of the smear and ascertaining whether or not fresh pus cells are present.

SUMMARY AND CONCLUSIONS

1. One hundred and seventy-eight consecutive patients were treated over a period of twenty-six months by adaptation of a routine treatment to the individual.

2. The criteria of cure presented are not considered to be absolute, not in the class of cultural methods for example, but are criteria which are entirely practicable and have proved to be successful.

3. The increased use of sulfanilamide and sulfapyridine therapy renders fever therapy more difficult to administer and more dangerous to the patient, but to a great extent sulfapyridine has supplanted fever therapy.

4. The method of smear examination and evaluation adopted forms the basis of a practicable therapeutic regimen.

TWENTY MINUTE CARDIAC ARREST
WITH COMPLETE RECOVERY

PRINCIPLES OF PREVENTION AND TREATMENT

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Every surgical team will at times be called on to face the serious responsibility of sudden cardiac arrest in the operating room. Such a catastrophe may develop at any point in the procedure—during preliminary preparation, during induction of anesthesia, during the operation or during certain essential postoperative procedures.

The exact physiologic mechanisms involved may be extremely difficult to analyze either at the time or later, after deliberate and full consideration. Prompt, adequate and properly selected methods of stimulating the return of cardiac function, maintaining adequate cerebral oxygenation, are essential in order to save the lives of these patients. However, the exact choice of these procedures and the possibility of their application under the existing circumstances are often difficult. As a result, routine measures and cardiants are applied, frequently without success. Primarily because of this uncertainty in management and results, we have been prompted to report the following case and its discussion, because it represents certain unusual aspects of this problem and has changed some of our fundamental concepts regarding cardiac resuscitation.

REPORT OF CASE

A man aged 20 was first seen at the Lahey Clinic on July 1, 1941 with a history of chronic cough and hemoptysis of four years' duration. Complete studies showed a bronchiectasis of the left lower lobe and spontaneous pneumothorax on this side. Otherwise his examination was essentially negative.

The patient was admitted to the New England Deaconess Hospital on Sept. 26, 1941 for lobectomy. On the fifth day he was prepared for operation. Preoperative blood pressure was 124 mm. systolic and 60 mm. diastolic, the pulse rate 88, the respiratory rate 24. Premedication consisted of $\frac{1}{2}$ grain (0.01 Gm.) of morphine, $\frac{1}{150}$ grain (0.0004 Gm.) of scopolamine subcutaneously and $1\frac{1}{2}$ grains (0.1 Gm.) of pentobarbital sodium by mouth, given at 12:30 p. m.

At 1:20 a 10 mm. flexible metal endotracheal catheter with balloon cuff was introduced into the trachea under direct vision after topical anesthesia with 10 per cent cocaine hydrochloride. General anesthesia was started at 1:23. The anesthetic mixture for induction was approximately 30 per cent cyclopropane and 70 per cent oxygen in a closed circuit with carbon dioxide absorption. The blood pressure rose to 160 mm. systolic and 100 mm. diastolic; the pulse rate was 72 and the respiratory rate 22. After induction, the balloon cuff was inflated to insure a closed system. The endotracheal tube was connected to the conduits of the gas machine by means of adapters. Anesthesia was then maintained by a mixture of approximately 20 per cent cyclopropane in oxygen.

The operation was started at 1:55 and the thoracic cavity opened at 2:17. At this point the blood pressure was 140 mm. systolic and 96 mm. diastolic, the pulse rate was 104 and the respirations were very shallow and rapid. Periods of passive positive respiration of one to two minutes were resorted to at five minute intervals in order to insure an adequate oxygen-carbon dioxide exchange. The blood pressure and pulse continued at about the same level and were never lower than the preoperative level. At 3:15 the bronchus and vessels leading to the left lower lobe were ligated, the specimen was removed and the stump was sutured and inspected. At 3:25 p. m., two

hours after the start of anesthesia, it was decided to aspirate a small quantity of secretion in the trachea through the endotracheal tube. At this time the blood pressure was 140 mm. systolic and 100 mm. diastolic, and the pulse rate was 108. The operative procedures were halted during this interval to permit aspiration, and the surgical team, watching the upper lung and heart, was prepared to prevent possible trauma to the remaining lung tissue if the patient should suddenly cough or strain. After the apparatus for anesthesia was disconnected at the mouth and a number 14 French catheter was introduced through the endotracheal tube for suction, the patient gave three convulsive coughs. At this point the surgeon remarked that the heart had ceased beating and was semidilated and tense. Rhythmic cardiac compression simulating systole was instituted immediately and the patient was put in 5 degree Trendelenburg position. At 3:28, three minutes after cessation, 2 minims (0.12 cc.) of neosynephrin hydrochloride was injected into the musculature of the ventricle; at 3:29 an additional 2 minims of neosynephrin hydrochloride was given into the ventricle and artificial systole was continued. At 3:30, five minutes after cessation, 10 minims (0.6 cc.) of 1:1,000 epinephrine hydrochloride solution was injected, half into muscle and half into the ventricular cavity. The heart began to show fibrillatory movements and then gradually to beat vigorously for five to six beats. It again relapsed into fibrillation and then stopped. A second dose of 1 cc. of epinephrine was introduced, without effect. Actual cardiac compression simulating systole was continued until twenty minutes later, when the heart again began spontaneous rhythmic contractions, at 3:45. At 3:48 p. m. 7 cc. of nikethamide was given into the vein of the foot.

At the instant of cessation of the heart beat all anesthetic gases were discontinued and artificial respiration (28 to 32 a minute) was begun and maintained by strong rhythmic pressure (12 to 16 mm. of mercury) on the rebreathing bag, with only oxygen flowing. At 3:40 p. m., fifteen minutes after cessation, 15 cc. of procaine hydrochloride was administered intramuscularly into the left shoulder. Throughout this procedure the patient was cyanotic and the color of his head and shoulders was violet, but he did not have the grayish, waxy appearance of death. Within a few seconds after the heart resumed spontaneous rhythmic contractions (3:45 p. m.) spontaneous respiratory excursions progressed from rapid shallow respirations to rapid (36 a minute) exaggerated respirations. At 3:50, or twenty-five minutes after cessation of the heart, the patient's color became a livid pink. The blood pressure was first obtained at this time; it measured 160 mm. systolic and 120 mm. diastolic, and the pulse rate was 118. Respirations gradually quieted as to excursion and rate. For the remainder of the operation only oxygen was administered.

Closure of the chest was accomplished in the ordinary manner, and the operation was concluded at 4:50 p. m., one hour and twenty-five minutes after initial cardiac cessation. The operative time was three hours. At this time the blood pressure was 114 mm. systolic and 64 mm. diastolic; the pulse rate was 124. The patient was returned to a private room at 5:10, after he responded to spoken commands, and with the second of two 500 cc. transfusions running. He was placed in an oxygen tent immediately, and the bed was placed in shock position.

Preoperatively a continuous intravenous drip had been started through a gold cannula to the right long saphenous vein at the ankle, and during operation the patient received two transfusions of 500 cc. each. Immediately after operation it was noted that there was no pulse in the right radial artery, but after one hour the pulse in the right arm had returned to its normal magnitude. The operative position, with the right arm dependent, possibly was a factor in the production of this prolonged arterial spasm.

SUMMARY OF POSTOPERATIVE CONVALESCENCE

The patient's immediate postoperative recovery was entirely satisfactory and differed but little from the average lobectomy case. He was mentally clear and alert, and there were no signs of cerebral damage demonstrable at any time. The upper lobe was well aerated and expanded from the beginning, but, because he had a low grade fever, closed drainage was maintained for two weeks and simply converted into open drainage through

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the same tube at the end of the second week. His low grade fever gradually subsided and, since his condition was good, he was allowed to be up on his seventeenth day. On his second day up he complained of persistent frontal headache and his temperature rose to 103 F. He was put back to bed and a course of sulfathiazole was started. Our immediate consideration was the possibility of brain damage and brain abscess. He was seen by the neurosurgical department, which found no abnormal neurologic signs and a lumbar puncture was negative in every respect. Preoperatively he was known to have a chronic pansinusitis, and this was reviewed by our nose and throat consultant and did not seem to be the source of his systemic reaction. He continued to have high temperature, his headache subsided after a few days and he complained of no symptoms whatever thereafter. The continued chemotherapy had no effect on this temperature. Roentgenograms of his chest showed a well expanded upper lobe and no demonstrable pleural infection. Repeated thoracentesis produced no pus. However, because of his continued fever a rib resection was done, establishing more adequate drainage and removing a small amount of fibrin lying along the posterior gutter. This did not affect his temperature, which continued swinging for several more weeks and gradually subsided. During all this time he had no symptoms and felt well. During his convalescence he had two electrocardiograms which were entirely normal, and before discharge from the hospital an electroencephalogram was also made, which was normal. He left the hospital in good condition sixty days after operation.

COMMENT

Discussion of this case may be subdivided into three physiologic divisions. First, what were the etiologic factors causing this cessation? Second, what was the rationale of the treatment employed in this case? Third, what preparation and regimen of treatment might be of value (1) to prevent or (2) to treat a similar condition more adequately if it should arise in the future?

Etiology.—Etiologic factors which might cause this sudden cardiac arrest are (1) idiosyncrasy to the anesthetic drug, (2) onset of ventricular fibrillation, (3) occurrence of a vagovagal reflex resulting in cardiac arrest. Idiosyncrasy to the agent, while possible, is not probable in view of the time of occurrence; that is, two hours after the start of its administration. The onset of ventricular fibrillation can be ruled out, as the surgical team was watching the exposed heart and did not note any fibrillatory movement when massage was started.

In this instance cessation was most likely the result of a vagovagal reflex influenced by the following factors and facts: With the wearing off or loss of topical anesthesia (cocaine) after two hours of operating, vagal irritability returned to this region. Also an increase in the excitability of the vagus fibers resulted from the depression of the cells of the medullary center. The factors influencing this depression were medication, anesthesia and suboxygenation resulting from surgical diminution of vital capacity, as evidenced by the shallow respirations. Stimulation of the vagovagal reflex resulting in cardiac arrest was initiated when the suction catheter irritated or stimulated the irritable tracheal bifurcation, as evidenced by the cough spasm noted just prior to cardiac cessation. Although this reflex may have been transitory, the effect, inhibition or cessation, persisted.

A summation of physiologic factors which may be applicable to this case is found in the chapter on "Physiology of the Heart," of Starling's "Human Physiology."¹ These factors are (a) the increase in excitability of the vagus, (b) the site of vagal action on the heart, (c) vagal mode of action and drugs influencing it and (d) the effect of narcosis and anes-

thesia on vagal action. These factors are more or less explained in the following quotations from "Human Physiology":

A. It is remarkable that the excitability of the vagus fibers is dependent on the condition of the cells of the medullary centers. Thus, if the centers are depressed by narcotics, the vagus fibers become more excitable.

B. The action of the vagus fibers on the heart is almost identical in frog and mammal and is exerted primarily on the auricle. . . . Generally, the vagus absolutely stops the action of all parts of the auricles; in such cases the ventricles also cease beating.

C. Many facts point to the inhibitory impulses acting on the heart muscle itself. . . . These nerve effects are paralyzed by atropine, after administration of which no inhibitory effects can be produced by stimulation of nerve or muscle on any part of the heart. . . . Although various views as to the nature of inhibition have been put forward from time to time, the present tendency is to ascribe both the excitatory and the inhibitory effects of all nervous stimulation to the liberation, at the nerve ending, of small amounts of highly active substances, which are quickly destroyed in the tissues. According to Loewi, the vagus acts by producing some chemical substance which has the power of depressing the activity of the different parts of the heart. . . . It is now generally accepted that this substance is acetyl choline. . . . The action of acetyl choline is antagonized by atropine.

D. When the arterial system is dilated, so that the mean systemic pressure during cardiac inhibition is low, or when the asphyxial gasps of the animal are prevented by anesthesia or by a section of the spinal cord, the heart may fail to recover from the inhibition produced even by transitory stimulation of the vagus. In such cases it is necessary to knead the heart in order to restore its rhythmic action.

Rationale of Treatment in This Case.—The rationale of treatment in this instance was governed more by urgency and expediency than by any prepared plan or organized regimen for treatment.

Artificial systole to maintain circulation was immediately started by the surgeon. The patient was placed in 5 degree Trendelenburg position to facilitate cerebral circulation. Neosynephrin, a synthetic product, was used initially as the pressor stimulant because cyclopropane was the anesthetic agent. Laboratory and clinical reports² have demonstrated an increase in irritability of cardiac muscle, with a tendency to ventricular fibrillation when epinephrine is employed as a pressor substance in the presence of tissue saturation with cyclopropane. Procaine was given, with the hope of neutralizing this sensitization.³ When no effect was obtained from the second injection of neosynephrin, epinephrine then was used. Although this first injection of epinephrine initiated spontaneous cardiac activity, this action rapidly progressed to the undesirable state of ventricular fibrillation to cessation. A second dose of 1 cc. of epinephrine had no effect. Artificial systole was reestablished during fibrillation and subsequent cessation. The heart resumed spontaneous rhythm twenty minutes after the initial cessation. The stimulus undoubtedly was the rhythmic compression of the heart during artificial systole.

Simultaneously, artificial respiration was continued throughout this twenty minute period to maintain adequate pulmonary ventilation. In the absence of mechanical apparatus as recommended by Crafoord,⁴

2. Meek, W. J.; Hathaway, H. R., and Orth, O. S.: The Effects of Ether, Chloroform and Cyclopropane on Cardiac Automaticity, *J. Pharmacol. & Exper. Therap.* 61: 240-252 (Nov.) 1937.

3. Burstein, C. L., and Marangoni, B. A.: Protecting Action of Procaine Against Ventricular Fibrillation Induced by Epinephrine During Cyclopropane Anesthesia, *Proc. Soc. Exper. Biol. & Med.* 43: 210-212 (Jan.) 1940.

4. Crafoord, Clarence: Pulmonary Ventilation and Anesthesia in Major Chest Surgery, *J. Thoracic Surg.* 9: 237-253 (Feb.) 1940.

1. Starling, E. H.: Human Physiology, chapter 31, Physiology of the Heart, ed. 7, Philadelphia, Lea & Febiger, 1936, pp. 734-738.

Mautz⁵ and Beck,⁶ the anesthetist immediately started and maintained artificial respiration (28 to 32 per minute) by rhythmic pressure (12 to 16 mm. of mercury) on the rebreathing bag of the gas machine. The anesthetic mixture was immediately replaced by oxygen in the breathing circuit. Oxygen under pressure was supplied to the pulmonary tree by this system of endotracheal tube with inflated cuff, adapter and gas machine. This method resulted in demonstrable, adequate expansion of the lung. The endotracheal tube insured a patent airway. This type of closed system of endotracheal tube with inflated cuff and adapter safeguards against simultaneous, undesirable inflation or acute dilatation of the stomach, which can readily occur when a mask is employed over the mouth and nostrils and strong positive pressure is used. Nikethamide was administered intravenously as a stimulant after the return of circulation and respiration because of its mildly cardiac and pronounced respiratory effect.

Artificial cardiac diastole was most likely produced by the following factors: 1. The inherent elasticity and muscle recoil facilitated auricular and ventricular filling. 2. The intermittent changes in positive pressure exerted during artificial respiration resulted in differences in venous pressure both in the vena cava and in the pulmonary circulation. Exaggerated pulmonary ventilation facilitated blood flow to the auricle from the lungs. The definite discernible artificial diastole probably was dependent on these factors.

During this twenty minute interval, oxygenation was maintained by artificial respiration and circulation. Beck stresses the importance of oxygenation to prevent cellular damage and especially medullary cell damage, with respiratory death. The prevailing impression is that cortical cells begin showing cellular degeneration in the form of trydoidolysis five to seven minutes after being deprived of oxygen. Beck mentions animal experimentation by Weinberger,⁷ placing this time at three to five minutes. The lack of progressive signs of anoxia was the motivating influence in the continuation of manual oxygenation over the twenty minute period until circulation and respiration resumed normal activity.

RECOMMENDED METHODS OF PREVENTION AND TREATMENT

Obviously the best management of this problem is its prevention. This necessitates an attempt to avoid the onset of this inhibitory action of the vagus on the heart. This is accomplished first by prevention of increased vagal irritability resulting from suboxygenation or depressing effects of narcosis or anesthesia and second by the prevention of afferent reflexes, or vagovagal reflexes, providing the inhibitory efferent effect. The latter is accomplished by avoiding or blocking, whenever possible, stimuli affecting the afferent pathways of the vagal nerve. It is our opinion that necessary procedures, such as aspiration of trachea and hilar manipulations, which may produce afferent vagal stimulation, should not be carried out without adequate block of these pathways. Local infiltration of hilar plexes or topical application of anesthetic to the tracheo-bronchial tree should afford some protection. In addition,

the efferent effects of the vagus nerve are blocked directly at the myoneural junction by an adequate dose of atropine. Atropine $\frac{1}{15}$ grain (0.0008 Gm.) is considered by many to be an adequate dose. This can be given as part of the preoperative medication and repeated as indicated, depending on the duration of the operation.

However, when this catastrophe occurs, the following plan of treatment is recommended. Adequate tissue oxygenation by means of artificial circulation and pulmonary ventilation should be instituted immediately and simultaneously. This is accomplished by the following methods:

Artificial Respiration.—An endotracheal tube, preferably with a balloon cuff attachment, should be inserted to insure a patent airway. Inflation of the balloon cuff insures a closed system with the distribution of the positive pressure within the pulmonary tree only. In the absence of apparatus to produce intermittent positive pressure (Mautz), rhythmic pressure on the rebreathing bag of the closed circuit will insure adequate pulmonary ventilation. Carbon dioxide absorption is essential to prevent accumulation of this product within the closed system. Rhythmic pressure of 12 to 16 mm. of mercury at a rate of 28 to 32 per minute is recommended.

Artificial Circulation.—Circulation of the blood should be maintained by artificial systole in the form of rhythmic manual compression. It is advisable to synchronize this rhythm with that of artificial respiration to allow for the associated artificial diastole. This necessitates cardiac accessibility.

If the chest is open, the pericardium can be opened from either side and an efficient artificial systole instituted. If the abdomen is open, the approach may be made through the left diaphragm. If neither chest nor abdomen is open at the time, a rapid exposure of the heart can be accomplished by an intercostal incision in the anterolateral portion of the left chest, cutting the costal cartilage above and below. The influence of gravity on the cerebral circulation should be considered. A few degrees of Trendelenburg is a factor in aiding cerebral circulation.

Cardiants may be used in physiologic doses. Although their use is a standard method of treatment, many untoward and fatal effects have been observed. It is our opinion that the best treatment combines the outlined recommendations and the very judicious use of cardiants.

CONCLUSIONS

1. This case demonstrates that the time interval of cardiac arrest compatible with normal recovery is much longer than was formerly appreciated.

2. This recovery is dependent on adequate tissue oxygenation, especially of cerebral tissue.

3. This is accomplished by immediate and simultaneous artificial circulation and respiration.

4. Efficient artificial circulation is dependent on more than simple cardiac massage.

5. The measures instituted must approach as closely as possible the normal physiologic cardiorespiratory sequence.

6. Synchronized artificial respiration associated with artificial cardiac diastole followed by artificial cardiac systole more nearly approaches this normal sequence.

7. This case with complete recovery following prolonged cardiac arrest demonstrates the value of these principles of prevention and treatment.

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5. Mautz, F. R.: A Mechanical Respirator as an Adjunct to Closed System Anesthesia, *Proc. Soc. Exper. Biol. & Med.* 42: 190-192 (Oct.) 1939.

6. Beck, C. S.: Resuscitation for Cardiac Standstill and Ventricular Fibrillation Occurring During Operation, *Am. J. Surg.* 54: 273-279 (Oct.) 1941.

7. Weinberger, L. M.; Gibbon, M. H., and Gibbon, J. H. Jr.: Temporary Arrest of the Circulation to the Central Nervous System: Physiologic Effects, *Arch. Neurol. & Psychiat.* 43: 615-634 (April) 1940.

Clinical Notes, Suggestions and New Instruments

LARYNGEAL STRIDOR ASSOCIATED WITH HYPOCALCEMIA IN AN ADULT

POSTOPERATIVE PARATHYROID DEFICIENCY WITH OTHER CONTRIBUTING ABNORMALITIES

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Laryngeal spasm as a symptom of tetany in infancy is well recognized. In later life it is rarely encountered. Guild¹ states that it almost never occurs after the second year. The following report of laryngeal stridor associated with parathyroid tetany indicates that under certain circumstances the symptom does occur in adult life. A Jewish housewife aged 70 had a bilateral thyroidectomy performed for colloid goiter when she was 47. At 60 she had a bilateral iridectomy done for cataracts, at 63 she began to notice the onset of hoarseness, at 64 the initial phase of chronic congestive heart failure and at 69 acute attacks of laryngeal stridor. The Chvostek and Trousseau signs were positive, the serum calcium was found to be 4.2 mg per hundred cubic centimeters, and the attacks of stridor were instantly relieved by intravenous calcium gluconate. Control of the serum calcium level with dihydrotachysterol relieved the symptom.

Albright² reports that he now has under observation a similar case. In his case the laryngeal stridor also developed many years after thyroidectomy, at a time of physical disability and in association with a paralyzed vocal cord. His patient, however, has not responded so definitely to treatment with dihydrotachysterol.

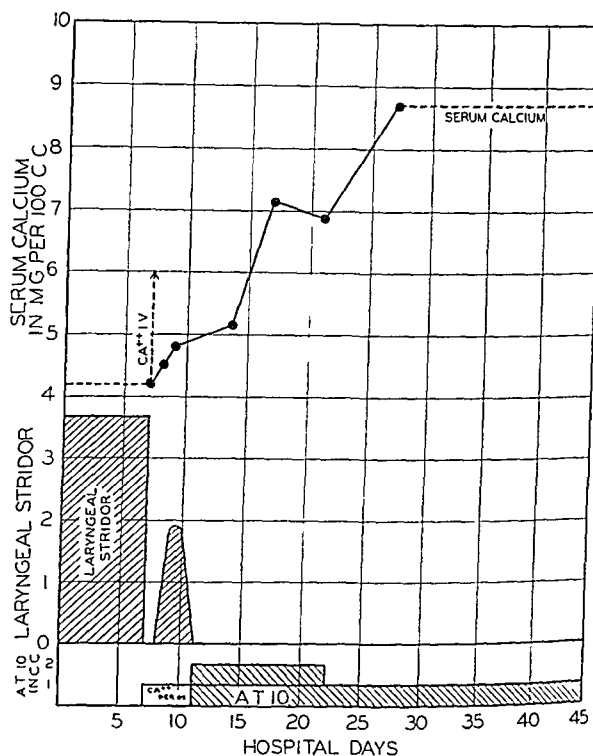
REPORT OF CASE

History—G. S., Jewish housewife aged 70, was essentially well until she was 47 (1917), at which time a colloid adenoma of the thyroid was removed. The postoperative chart indicates an uneventful convalescence. Ten years later the onset of bilateral lenticular opacities was observed and three years subsequently, at the age of 60 (1930), iridectomies were performed. At 63 (1933) she first began to notice increasing hoarseness and one year later she commenced to suffer from prolonged periods of edema of the ankles. The edema was successfully treated by her private physician with digitalis, diuretics and rest. At 66 (1936) she noticed her first attacks of laryngeal spasm with inspiratory crowing respiration. These occurred at intervals of several weeks and were usually precipitated by emotional tension, particularly by anger. The attacks occurred with gradually increasing frequency until she was 69 (1940), at which time they became much more prolonged and occurred independently of emotional stress. She became cyanotic during the attacks. Six months before admission she became so weak that she could seldom go out, and increasing dyspnea and orthopnea developed. These symptoms and her stridulous breathing became worse until the time of admission.

Examination—On physical examination the patient was pale, senile and chronically ill and lay propped up in bed in constant mild dyspnea. Basic respiration was regular. At times, however, she was seized with sudden attacks of crowing inspiratory stridor which would last for from two to three minutes. In the more severe attacks deep cyanosis would develop, producing a clinical picture that was truly alarming. The skin was not remarkable. The eyes showed the scars of iridectomy. A scar of the thyroidectomy was present. There was moderate distention and pulsation of the veins of the neck. The heart was clinically enlarged. The heart sounds were regular, of a tick-tack quality, with a soft blowing apical systolic murmur. The blood pressure was 127 systolic and 68 diastolic. The radial arteries were palpable. There were coarse rales at the bases

of both lungs. The abdomen was distended with fullness in the flanks, shifting dullness and a fluid wave. There was pitting edema of the abdominal wall and of the lower extremities. Laryngoscopic examination revealed paralysis of the right vocal cord.

Repeated examinations of the urine revealed a specific gravity varying from 1.010 to 1.025, traces of albumin but no sugar. There were small numbers of white blood corpuscles and rare hyaline and fine granular casts in the sediment. On admission the hemoglobin content was 65 per cent (Hayden-Hausser), the red blood cell count 4,370,000 and the white blood cell count 9,250. The stained smear showed adequate platelets and moderate achromia. The differential count showed 89 per cent polymorphonuclears, 7 per cent lymphocytes and 4 per cent large mononuclear cells. The nonprotein nitrogen was 35 mg per hundred cubic centimeters, the total serum protein 8.4 Gm, serum phosphorus 4.3 mg and serum alkaline phosphatase activity 4.6 Bodansky units. Serum calcium determinations on three successive days were 4.2, 4.5 and 4.8 mg per hundred cubic



The abscissa illustrates the serum calcium level in milligrams per hundred cubic centimeters and the disappearance of laryngeal stridor, and at the bottom of the chart is given the dosage of dihydrotachysterol (A.T. 10). The ordinate represents time in hospital days. Note that following the administration of dihydrotachysterol the blood calcium level rapidly rose in association with continued relief of the laryngeal spasm.

centimeters. (The latter two readings followed calcium administration.) Stool examinations were negative for occult blood. A phenolsulfonphthalein renal function test showed 19 per cent excretion of dye at the end of one hour. Roentgen examination of the long bones, skull and spine showed moderate demineralization of the lumbar spine.

Hospital Course—Although the cardiac reserve was obviously very limited, there was considerable improvement in dyspnea and edema as the result of bed care, thoracenteses, diuretics and digitalization. This improvement did not, however, appear to influence the periods of inspiratory laryngeal stridor, which occurred many times a day, lasted for several minutes and at times were accompanied by an alarming degree of cyanosis. At the time of these attacks the Trousseau sign was definitely positive and the Chvostek sign slightly positive.

On the seventh hospital day 1 Gm of calcium gluconate was administered intravenously during a seizure, with immediate

From the Medical Department, Hartford Hospital.
1. Guild, H. L., in *Practice of Pediatrics*, edited by Joseph Brenne-
mann, Hagerstown, Md., W. F. Prior Company, Inc. 1937, vol. 1,
chapter 37.
2. Albright, Fuller. Personal communication to the author.

relief that persisted for about twenty hours (shown in the chart). In view of the instant response to intravenous injection, 3 Gm. of calcium gluconate and 1 cc. of percomorph oil were administered daily by mouth. This regimen was associated with a slight elevation of serum calcium (from 4.2 to 4.8 mg. per hundred cubic centimeters) and with partial alleviation of respiratory stridor. On the eleventh hospital day this regimen was supplemented with dihydrotachysterol, which was given in doses of 2 cc. daily for a period of eleven days and in doses of 1 cc. daily thereafter.

During the eleven day period in which 2 cc. of dihydrotachysterol was given, the serum calcium rose from approximately 5 mg. to approximately 7 mg. per hundred cubic centimeters, and the respiratory stridor disappeared entirely and permanently. During the first six days after reduction of the daily dose to 1 cc. the serum calcium continued to rise, attaining the level of 8.7 mg. per hundred cubic centimeters on the twenty-seventh hospital day.

After the twenty-seventh hospital day serum calcium determinations were discontinued, and the dosage of dihydrotachysterol was regulated by means of urinary calcium. This was crudely determined by means of the Sulkowitch test.³ Observations were made on the twenty-fourth, twenty-fifth, thirty-second and thirty-fourth hospital days, at which times a "moderate amount" of calcium was present. This indicates satisfactory dosage.

COMMENT

The serum calcium level of 4.2 mg. per hundred cubic centimeters is extremely low. If this degree of hypocalcemia had developed suddenly after the thyroidectomy at the age of 47, death would almost certainly have ensued, yet the postoperative course at that time appears to have been uneventful. One must conclude that the hypocalcemia developed gradually. The development of cataracts suggests that it was well established by the age of 57. The reason for this gradual development of hypocalcemia is not clear. Retention of phosphorus caused by severe renal failure is known to produce hypocalcemia in some instances.⁴ In this case there was impaired excretion of the dye but no evidence of retention of nitrogen or phosphorus. This explanation is therefore inapplicable. Hypoproteinemia is usually associated with a mild degree of hypocalcemia, but in this case the serum protein was normal. A third possible explanation is that one or more parathyroid glands were left in situ at the time of operation and subsequently atrophied. Such residual tissue or its vascular supply might well have become involved in an area of scar tissue and gradually strangulated. A less conventional hypothesis is that fatigue atrophy, such as the hydropic degeneration of islet tissue observed by Allen⁵ in partially pancreatectomized dogs, may have occurred. The production of such atrophy by continued administration of anterior pituitary extracts and its prevention by adequate insulin dosage have led Haist, Campbell and Best⁶ to certain observations on the possible prevention of diabetes mellitus.

No more clear is the reason why symptoms of laryngeal stridor should have made their appearance so late in life. The paralyzed vocal cord was undoubtedly present immediately after the thyroid operation, and there is evidence from the lenticular opacities that a certain degree of hypocalcemia also preceded the onset of stridor. Chronologically the onset of stridor was associated with the onset of chronic myocardial failure. All these factors are probably important, and their coincident occurrence probably explains the rather bizarre phenomenon of laryngeal stridor as a symptom of hypocalcemia in an adult.

SUMMARY

A woman with paroxysmal laryngeal stridor associated with hypocalcemia was treated with dihydrotachysterol. Elevation of the serum calcium level resulted in complete disappearance of the paroxysms. The symptoms developed long after the thyroid gland had been surgically removed. A paralyzed vocal cord and the gradual onset of chronic myocardial failure were complicating abnormalities which presumably played a role in the development of the syndrome, one which though common in infancy almost never occurs in adult life.

179 Allyn Street.

PYOURETER SEVENTEEN YEARS AFTER NEPHRECTOMY

SELVAN DAVISON, M.D., NEW YORK

The occurrence of pyoureter many years after nephrectomy without complete removal of the corresponding ureter is not common. In the case here presented the clinical picture caused by pyoureter was characterized mainly by obscure fever of six weeks' duration.

REPORT OF CASE

History.—R. W., a woman aged 53 born in Russia had had rheumatic fever in childhood. A right mastoidectomy was performed thirty years before the present admission. An appendectomy was done five years later, followed in two weeks by a right ureterolithotomy. Eight years later a right nephrectomy for calculus pyonephrosis was performed at another hospital. For many years, until four years ago, the patient had attacks of cramping pain in the right upper quadrant of the abdomen brought on by food and relieved instantly by licorice powders. Eight years before this admission she was told that she had gallstones but refused operation. During the last seventeen years, there were no genitourinary symptoms. Dysuria, hematuria, frequency, urgency and attacks of renal colic had been completely absent. The menopause occurred at the age of 49.

Six weeks before admission the patient was suddenly seized with sharp pain in the right lower quadrant of the abdomen and had a temperature of 102 to 103 F. for several days. She then was out of bed, although the pain persisted and numerous chilly sensations occurred. For six weeks she complained of moderate generalized malaise. The day before admission, the pain and chilly sensations increased noticeably, and the temperature was 102.5 F. The patient was then admitted to the hospital.

Examination.—The patient had a sallow complexion. She was not in acute distress. A loud systolic murmur was heard all over the precordium and was heard best at the pulmonic area. The second pulmonic sound was greater than the second aortic sound. The blood pressure was 120 systolic and 75 diastolic. There was well defined tenderness in the right lower quadrant of the abdomen and a sensation of fulness in the upper part of that area. On pelvic examination the right fornix was felt to be full and boggy, and there was a definite sensation of thickening and induration in the region of the right broad ligament. Rectal examination gave essentially negative results. The chest was clear. Icterus was not noted.

The urine on admission was essentially normal. After several days a few white blood cells were noted. The first urine culture showed *Streptococcus hemolyticus* alpha. Two weeks later a second urine culture revealed *Staphylococcus aureus* beta and diphtheroids. On two examinations no acid-fast bacilli were found in urines taken with the cystoscope. Blood culture on admission showed *Staphylococcus aureus* alpha in three flasks. The hemoglobin content was 83 per cent and the white blood count was 13,250 per cubic millimeter, of which 58 per cent were segmented polymorphonuclear cells and 2 per cent nonsegmented; there were 28 per cent lymphocytes and 12 per cent monocytes. The blood urea nitrogen

From the Medical Service of Dr. George Baehr, Mount Sinai Hospital.

3. Albright, Fuller: Note on the Management of Hypoparathyroidism with Dihydrotachysterol, J. A. M. A. 112: 2592-2593 (June 24) 1939.

4. Albright, Fuller; Drake, T. G., and Sulkowitch, H. W.: Renal Osteitis Fibrosa Cystica, Bull. John Hopkins Hosp. 60: 377-399 (June) 1937. Albright.³

5. Allen, F. M.: Experimental Studies in Diabetes: Series 14. The Pathology of Diabetes: 4. The Role of Hyperglycemia in the Production of Hydropic Degeneration of Islands, J. Metabolic Research 1: 75-88 (Jan.) 1922.

6. Haist, R. E.; Campbell, James, and Best, C. H.: The Prevention of Diabetes, New England J. Med. 223: 607-615 (Oct. 17) 1940.

was 10 mm. per hundred cubic centimeters, the icteric index was 6, the cholesterol was 190 mg., the blood Wassermann reaction was negative and blood agglutination tests for typhoid, infectious mononucleosis and undulant fever were negative.

Course.—After several days, because of a positive blood culture, the patient was given sulfathiazole, 1 Gm. every four hours. Chemotherapy was instituted at the time that the temperature was apparently falling spontaneously. The drug had to be discontinued after three days owing to the development of a classic although mild sulfathiazole eruption of the skin. The blood cultures remained sterile subsequent to the first positive report.

The mass in the right lower quadrant of the abdomen was suggested on admission to be due to an abscess in the stump of the right ureter which had not been removed following a nephrectomy seventeen years before. A barium enema was given to rule out the possibility of a neoplasm of the cecum. The barium enema gave negative results, except that three concretions, probably representing gallstones, were seen in the right upper quadrant of the abdomen. An intravenous pyelogram was then done and revealed a well visualized left upper urinary tract with enlargement of the left kidney. Distorted calices were noted, and these gave the appearance of multiple cysts. The left ureter was normal. The right upper urinary tract was not visualized, and the outline of the right kidney was not seen. An ovoid concretion 1.5 cm. in length was seen over the right wing of the sacrum. The relationship of this concretion to the ureter was not demonstrated, although it was reported as probably representing a ureteral calculus. There was a small concretion in the midline of the pelvis overlying the lower sacrum.

The patient's general condition continued to be surprisingly good. There was little spontaneous pain and the temperature ranged around 101 F. Cystoscopy was performed by Dr. Leo Edelman.

Cystoscopic Observations.—Two hundred and fifty cc. of turbid urine was evacuated from the bladder. A low grade cystitis was noted, with mucopus on the floor especially in the region of the right ureteral orifice. The left ureteral orifice was normal, and crystal clear urine was seen coming from the left ureter, into which a catheter was easily introduced. The operator was unable to engage a catheter on the right side and an orifice was not definitely visualized because of inflammation and edema. The margin of the inferior sphincter was slightly elevated and congested. The bladder urine showed frequent white blood cells. Ureteral urines were normal.

Sufficient evidence was now at hand to be certain that a periureteritis and a ureteral abscess were present. Therefore, exploratory laparotomy was performed by Dr. Leo Edelman. The distal remaining 8 inches (20 cm.) of the right ureter was revealed. Intense periureteral inflammation and thickening were present. The proximal portion of the ureteral stump contained a large abscess, and through the proximal opening purulent material was flowing. The distal end of the ureter contained a calculus which blocked the ureteral orifice. The entire remaining 8 inches of the right ureter was excised and a drain left in the operative site.

The postoperative course was slightly rough for four days, during which time there was fever to 105 F. She received sulfathiazole during these four days and the temperature came down sharply to 100 F. The remainder of the postoperative course was essentially uneventful, although moderately slow because of drainage from the wound. The drainage eventually ceased and the patient was discharged cured.

COMMENT

Jeck¹ has said that "given an infected ureter, the corresponding kidney of which has been removed, whether or not the stump will become a pus pocket, depends chiefly on two factors: (1) the presence of an obstruction, such as stone, stricture or

kink and (2) injury to the nerve supply of the ureter, either by operative trauma or peri-ureteritis and consequent scar formation."

The presence of a calculus in this case bears out the observation that obstruction is necessary for the formation of a pus pocket. No pathologic process remains in the great majority of cases of nephrectomy, although the ureter or part of it is left in situ. This is due to the fact that adequate drainage of the stump usually occurs. Latchem,² in his experimental work on the physiopathology of the ureter, has shown this to be so. His conclusions are: 1. Absorption of the contents of a distended ureter is very limited if it occurs at all. 2. If infection is present in the ureteral contents, it may spread through the ureteral wall and give rise to periureteral infection and abscess formation.

The most interesting fact in the case history is that the patient was symptom free for seventeen years following nephrectomy. Hennessey,³ in reviewing reports by Roedelius⁴ and Brongersma⁵ of pyoureter developing seventeen and twenty-three years respectively after nephrectomy, states that the reason was delay in recognition. He believes that the majority of such cases are and should be detected between a period of a few months and three years after nephrectomy. While this is probably true in the majority of cases, the patient here described was symptom free and did not seek a physician's advice for any genitourinary complaints for seventeen years. There was no dysuria and even when she was in the hospital there was no pyuria or hematuria. Consequently, one may postulate the possibility of sudden exacerbation of a latent infection by an unknown cause. Apparently sufficient ureteral contractions occurred⁶ to cause spillage of the contents, periureteritis and *Staphylococcus aureus* bacteremia. In the case just presented, the calculus was far down the ureter and blocked drainage into the bladder. The presence of some inflammation at the right ureteral orifice was probably a concomitant of the severe periureteritis. Since patency of the lower end of the ureter was blocked, infection sought another outlet. This was through the free end of the ureteral stump. One cannot tell when the actual formation of the periureteritis and the abscess took place. It may have been a slow, symptomless process for seventeen years which suddenly lit up. It is possible that for many years the calculus was not causing obstruction, and then shifting its position closed off the exit to the bladder and therefore blocked the natural drainage with consequent formation of an empyema in the stump of the ureter.

I do not intend to discuss treatment except to mention the fact that most writers on the subject such as Hyman, Hunt, Reid, Latchem and White recommend surgical removal of the infected stump. This was carried out in the case reported in this paper.

SUMMARY AND CONCLUSIONS

Pyoureter and periureteritis occurred seventeen years after nephrectomy for calculous pyonephrosis. The stump of the ureter contained a calculus.

No genitourinary or other symptoms referable to the process were present during these seventeen years.

The patient presented a diagnostic problem of obscure fever of six weeks' duration.

Successful surgical removal was carried out.

It is important to determine at the time of nephrectomy whether the ureteral orifice into the bladder will remain patent. If by the presence of a calculus or stricture free drainage into the bladder is prevented, complete ureterectomy should be carried out to obviate future infection and empyema in the ureteral stump.

5 East One Hundred and First Street.

2. Latchem, R. L.: Experimental Study of the Ureter After Nephrectomy, *J. Urol.* 8: 257 (Sept.) 1922.

3. Hennessey, R. A.: Empyema of the Ureteral Stump, *J. Urol.* 40: 262 (July) 1938.

4. Roedelius, E.: Ueber Ureterstenosen, *Ztschr. f. urol. Chir.* 4: 174, 1918.

5. Brongersma, H.: Un cas de urérite se manifestant 23 ans après la néphrectomie, *A. franç. d'uro.* 21: 583, 1921.

6. Fronstein, R.: Das Empyem des Harnleiterstumpfes, *Ztschr. f. urol. Chir.* 20: 183, 1926. Latchem.²

1. Jeck, H. S.: Pyoureter, *Surg., Gynec. & Obst.* 52: 1158 (June) 1931.

PSEUDOEPITHELIOMATOUS HYPERPLASIA IN A CASE
OF MULTIPLE PYODERMA

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AND M. E. OBERMAYER, M.D., LOS ANGELES

Pseudoepitheliomatous hyperplasia has lately been studied extensively by Winer.¹ His report covers the literature so completely and reviews the theoretical and practical considerations of this difficult problem so thoroughly that these topics need not be discussed here.

The following case is reported because we believe that it illustrates well the practical difficulties intrinsic in the histologic diagnosis of pseudoepithelioma.

REPORT OF CASE

A. S., a white man of native Kentucky stock, aged 50, complained of ulcers on the buttocks of about six months' duration. The lesions started as small painful "spots" and gradually enlarged to cover the entire left buttock and the adjacent part of the thigh and the medial half of the right buttock. The history that the patient gave must be accepted with reservations, because he frequently changed his story. He spent the greater part of his life in various institutions of correction. When free, he was either a broommaker, a gardener or an itinerant cosmetic peddler. Questioning in regard to venereal diseases brought the reply "Yep, doc. I've had all of them many times, and lots of shots—got yellow from them once—lasted three months." The only other illnesses he remembered were childhood diseases.



Fig. 1.—Section from border of ulcer, showing thickening of the epidermis, disruption of basal cell layer, apparent infiltration of dermis with nests of cells and dermal cellular infiltrate. Low magnification.

His general development and nutrition were good. Examination revealed that the skin of the affected area was erythematous and definitely indurated. Within this area were scattered tender, crusted lesions approximately 1.5 to 2.5 cm.

in diameter. Removal of the crusts disclosed ulcers with nonindurated, rolled borders and an uneven, easily bleeding, depressed surface. In addition, small ulcerated lesions of the ecthyma type were present on the elbows and on the anterior surfaces of the ankles and feet.



Fig. 2.—High magnification of figure 1, showing concentric arrangement of cells with keratinized cell types in the center, cellular anaplasia and mitotic figures.

Scattered over the lateral and posterior aspects of the thighs and the anterior portions of the legs were atrophic scars with hyperpigmented borders; their outline was suggestive of healed cutaneous gummas.

A provisional diagnosis of pyoderma, with infectious granuloma of syphilitic or fungous origin as an alternative diagnosis, was made.

The blood count was normal; examination of the blood, including Wassermann, Kahn, Kline and Mazzini tests, gave negative results; the result of the provocative Mazzini test was likewise negative.

Two specimens from the borders of the ulcers were removed for biopsy and examined at the University of Chicago Clinics.

One section showed the features of an infectious granuloma with epidermal proliferation and heavy dermal infiltration, consisting mainly of plasma and epithelial cells, which reached far down into the dermis.

The other section, however, showed the features illustrated in figures 1 and 2. The epidermis was considerably thickened. The basal cell layer was disrupted and the dermis appeared to be infiltrated with nests of cells resembling those of the prickle cell layer. The arrangement of the cells was concentric, with keratinized cell types in the center. Distinct cellular anaplasia was present, and numerous mitotic figures were seen. The dermis appeared to be disrupted and edematous. A cellular infiltrate, composed for the most part of round cells and some plasma cells, was present around the nest of epithelial cells. On the basis of these features a diagnosis of squamous

1. Winer, L. H.: Pseudoepitheliomatous Hyperplasia, Arch. Dermat. & Syph. 42: 856 867 (Nov.) 1940.

cell carcinoma was made. However, since the history of multiple ulceration of comparatively short standing did not seem in agreement with the histologic diagnosis, the section was shown to Dr. H. Gideon Wells, of the Department of Pathology of the University of Chicago, who confirmed the diagnosis of squamous cell carcinoma.

The incorrectness of the histologic diagnosis was soon brought out by the clinical course of the disorder. The simple local measures employed consisted of sitz baths of a solution of potassium permanganate (1:8,000) several times daily and alternate applications of boric acid ointment, U. S. P., and of a 2 per cent aqueous solution of methylrosaniline. In addition, several iron compounds and liver extract were administered. The ulcers improved slowly but constantly and were almost entirely healed within a period of twenty weeks, at which time the patient was lost from observation.

The nonmalignant character of the ulcers was also verified histologically by a second biopsy, performed eighteen weeks after the first, the specimen was removed from an area practically contiguous to that from which the first specimen was taken. The second section showed none of the features of squamous cell carcinoma but only those of a nonspecific infectious granuloma.

SUMMARY AND CONCLUSIONS

One of the ulcers in a case of multiple pyoderma with pseudoepitheliomatous hyperplasia at biopsy showed features so suggestive of squamous cell carcinoma that a dermatologist and a pathologist independently made that diagnosis. The practical difficulty of recognizing pseudoepitheliomatous hyperplasia histologically is illustrated.

347 West Berry Street—1930 Wilshire Boulevard

Council on Pharmacy and Chemistry

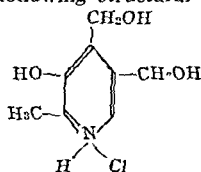
NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADDITION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

IT SHOULD BE NOTED THAT FOR THE PRESENT THE COUNCIL ACCEPTS PYRIDOXINE HYDROCHLORIDE ONLY FOR PURPOSES OF STANDARDIZATION AND EXPERIMENTATION.

A. E. SMITH, M.D., Acting Secretary

PYRIDOXINE HYDROCHLORIDE.—2-methyl-3-hydroxy-4,5-di (hydroxymethyl) pyridine hydrochloride (vitamin B₆ hydrochloride)—C₈H₁₁O₅NHCl (205.64). Pyridoxine hydrochloride has the following structural formula:



It may be isolated from natural sources or prepared synthetically from ethoxy-acetylacetone and cyanoacetamide.

Actions and Uses.—The nutritive and therapeutic value of pyridoxine hydrochloride has not been definitely established. It has been accepted by the Council for purposes of standardization and experimentation only.

Dosage.—A dose of 5 to 10 mg daily is suggested.

Pyridoxine hydrochloride occurs as a white, odorless crystalline powder which melts with decomposition between 200 and 212°C. Under the polarizing microscope it appears as thick, birefringent rods and broken fragments. When recrystallized from methanol containing a few drops of concentrated hydrochloric acid, needle-shaped crystals are obtained which are birefringent and exhibit oblique extinction. In the crystalline state, it is stable to light and air. Acidic aqueous solutions of pyridoxine hydrochloride are stable and may be heated for thirty minutes at 100°C. It is soluble in water (22 Gm per hundred cubic centimeters), slightly soluble in 95 per cent ethanol (11 Gm per hundred cubic centimeters), sparingly soluble in acetone, practically insoluble in ether. Aqueous solutions are acidic (pH about 3.0 for a concentration of 10 mg per cubic centimeter), produce a red color with ferric chloride solution, yield a precipitate with phosphotungstic acid solution and yield a precipitate with silver nitrate solution which is insoluble in nitric acid but soluble in ammonia water. Dissolve a few crystals of pyridoxine hydrochloride in 2 cc of alcohol. Add 2 drops of 10 per cent ammonium hydroxide solution and 1 cc

of 2,6-dichloroquinone chloroimide solution (0.01 per cent in alcohol). A deep blue color forms on standing.

Char. 0.4 Gm of pyridoxine hydrochloride. Boil the charred mass with a mixture of 2 cc of concentrated nitric acid and 8 cc of water, filter, wash with water, evaporate the filtrate to dryness and dissolve the residue in 0.5 cc of tenth normal hydrochloric acid, dilute to 5 cc with water and add 5 cc of hydrogen sulfide solution, any color produced does not exceed that of a blank control containing 0.02 mg of lead (0.005 per cent as lead).

When dried over sulfuric acid, anhydrous calcium sulfate or anhydrous magnesium perchlorate for twenty-four hours, the loss in weight does not exceed 0.2 per cent.

Determine the carbon and hydrogen content by combustion. The carbon content is not less than 46.5 nor more than 46.9 per cent, the hydrogen content is not less than 5.6 nor more than 6.0 per cent. The residue from the carbon hydrogen determination, or from an ash determination, does not exceed 0.05 per cent.

Determine the nitrogen content. The amount found is not less than 6.6 nor more than 6.9 per cent.

Method of Assay for Tablets and Solutions

The following reagents are necessary:

1. **Veronal Buffer.**—Dissolve 18.0 Gm sodium diethylbarbiturate in 700 cc of distilled water and titrate with normal hydrochloric acid to a pH of 7.5 to 7.7, using a glass electrode. Filter off the precipitate of diethylbarbituric acid. (If the buffer is allowed to stand over twenty-four hours, the pH must be readjusted with either normal hydrochloric acid or normal sodium hydroxide to a pH of 7.5 to 7.7.)

2. **Chloroimide Reagent.**—Dissolve 25.0 mg 2,6-dichloroquinone chloroimide in 100 cc of acid-free butanol. If the reagent is to be kept for some time, it must be stored in a brown, glass stoppered bottle at refrigerator temperatures, treated thus it is stable for about two weeks.

3. **Standard Solution.**—10.0 mg of dried crystalline pyridoxine hydrochloride is dissolved in exactly 100 cc of absolute alcohol. If the solution is to be used immediately, 95 per cent ethanol may be employed. (In the absence of a microbalance a larger quantity may be weighed and appropriate dilutions made from the more concentrated stock solution.)

Procedure.—Dilute the pyridoxine hydrochloride solutions to be tested to a final concentration in 0.10 mg of pyridoxine hydrochloride per cubic centimeter. In the case of tablets a sufficient number—ten or more—are transferred to a volumetric flask, water added and the flask shaken to disintegrate the tablets. After diluting to the mark, the solution is filtered, the first 25 cc discarded and the next 25 cc saved for the test.

In the following procedures the preparation of the standard and unknown must be carried on concurrently to allow the same amount of time for the development of color in the two solutions.

Transfer 5.0 cc of the solution to be tested (after diluting as indicated) to a 50 cc volumetric flask. Add 5.0 cc of the veronal buffer and 20 cc of ethanol.

Prepare a standard comparison solution by transferring 5.0 cc of the standard pyridoxine hydrochloride solution to a 50 cc volumetric flask, adding 5.0 cc of veronal buffer, 15 cc of ethanol and 5 cc of water.

Now add to both solutions 5.0 cc of butanol chloroimide reagent, start timing and shake intermittently for twenty minutes. Dilute to the mark with ethanol and compare in a colorimeter. The pyridoxine hydrochloride found is not less than 93 or more than 107 per cent.

EVIPAL SOLUBLE.—Evipal sodium—Sodium N-methylcyclohexenyl methyl-barbiturate—Sodium 1,5-dimethyl-5-Δ¹-cyclohexenyl barbiturate—Sodium cyclohexenyldimethyl barbiturate—C₁₁H₁₅O₅ N₂Na. The sodium salt of 1,5-dimethyl-5-Δ¹-cyclohexenyl barbituric acid.

Actions and Uses.—The actions and uses of evipal soluble are essentially similar to those of pentobarbital sodium except that it is designed only for intravenous use to produce anesthesia of short duration. When injected intravenously it is a quick-acting, general anesthetic with an early recovery period. In the majority of cases consciousness is restored in from fifteen to thirty minutes, depending on the amount of drug injected. Not uncommonly there follows some drowsiness or sleep if the patient is left undisturbed. While the intravenous use of barbiturates is a valuable procedure under certain circumstances it should be undertaken only by those experienced in this field who have had special training in the use of anesthetics of this type. It should not be looked on as an office procedure, adequate facilities should be at hand to combat untoward reactions. Ataxia and transient amnesia may occasionally be encountered. Contraindications are in general those of the barbitals compounds and general anesthetics.

Dosage.—As there is considerable variation in individual reactivity to any of the barbiturates, the dose must be individualized. In general, 2 cc to 4 cc of a 10 per cent solution is required to induce unconsciousness in adults, this is injected intravenously at the rate of 1 cc per ten seconds. An additional 1 cc, or 2 cc may be necessary if relaxation is not obtained with the initial dose, or it may be required during the operative procedure. A total amount of 10 cc of this 10 per cent solution is seldom required for adults, and it cannot be exceeded without danger.

Caution. If the solution is discolored or shows the presence of undissolved particles, even though it is freshly prepared, it should be discarded. The powder and solution undergo change on exposure to air and should not be kept for future use.

Manufactured by Winthrop Chemical Co., New York. U. S. patent 1,947,944. U. S. trademark 312,515. Ampules Evipal Soluble, 0.5 Gm powder, packaged with 0.5 cc sterile distilled water.

Ampules Evipal Soluble, 1 Gm powder, packaged with or without sterile distilled water

Evipal soluble occurs as a white crystalline odorless hygroscopic powder, with a slightly bitter taste, very soluble in water freely soluble in alcohol, practically insoluble in ether. An aqueous solution of evipal soluble is alkaline to litmus.

Dissolve about 0.5 Gm of evipal soluble in 100 cc of water, add an excess of diluted hydrochloric acid mix, allow to stand fifteen minutes and collect the resultant cyclohexenyldimethyl barbituric acid on a filter, wash with water and dry at 65°C. It melts at 143-146°C.

Transfer about 0.1 Gm of the dried cyclohexenyldimethyl barbituric acid to a stoppered cylinder, add 25 cc of water, shake the mixture for one minute, filter through paper and divide into two portions, to one portion add 1 cc of acetic acid and 0.5 cc of water saturated with bromine. An immediate discoloration occurs, to the other portion add 0.1 cc of tenth normal potassium permanganate solution a pale brownish yellow color appears.

Transfer about 0.5 Gm of evipal soluble to a 50 cc Erlenmeyer flask, add 5 cc of water and about 0.4 Gm of *p*-nitrobenzyl chloride dissolved in 10 cc of 90 per cent ethyl alcohol. Attach the flask to a reflux condenser and heat the mixture on a water bath for one half hour. Cool the flask and collect the precipitate on a filter, wash with water, dry at 65°C, dissolve the dry product in 5 cc of chloroform, filter, reprecipitate with alcohol and collect the precipitate, dry at 65°C the melting point of the product is 114-115°C.

Transfer about 0.3 Gm of evipal soluble to a test tube containing 2 cc of water and add dropwise a saturated solution of bromine in water until the color of bromine faintly persists after vigorously shaking the test tube. Pour the contents of the test tube into 100 cc of water, filter through paper, wash with water and dry at 65°C. The melting point of the product lies between 130 and 132°C, with decomposition.

Incinerate about 1 Gm of evipal soluble in a porcelain dish, cool, dissolve the residue in 50 cc of water and divide into two portions, the first portion responds to tests for sodium carbonate. Rinse the porcelain dish with 2 cc of diluted hydrochloric acid, add the rinsings to the second portion and filter through paper, the filtrate yields no coloration or precipitation on saturation with hydrogen sulfide (salts of heavy metals).

Boil about 0.5 Gm of evipal soluble with 5 cc of a 25 per cent sodium hydroxide solution. It is decomposed with evolution of ammonia.

Dissolve about 0.5 Gm of evipal soluble in 10 cc of water and divide the solution into two portions, to one portion add 1 cc of mercuric chloride solution, a white precipitate results, insoluble in excess water, soluble in an excess of ammonia, to the other portion add 5 cc of silver nitrate solution, a white precipitate results, soluble in excess water, soluble in an excess of ammonia.

Dissolve about 0.5 Gm of evipal soluble in 50 cc of water, add 5 cc of diluted nitric acid, allow to stand for fifteen minutes and filter through paper. Separate portions of 10 cc each of the filtrate yield no opalescence on the addition of 1 cc of silver nitrate solution (chloride) no turbidity on the addition of 1 cc of barium nitrate solution (sulfate).

Add about 0.1 Gm of evipal soluble to 2 cc of sulfuric acid the solution is pale yellow, gradually changing to brown orange (easily carbonizable substances).

Transfer about 1 Gm of evipal soluble accurately weighed, to a glass stoppered cylinder add 50 cc of anhydrous ether, stopper and shake for ten minutes decant the supernatant liquid filter through paper and repeat twice, using 25 cc and 15 cc portions of ether, respectively, utilizing the same filter, evaporate the combined filtrates to dryness in a tared beaker and dry to constant weight at 65°C the residue does not exceed 0.2 per cent (uncombined cyclohexenyldimethyl barbituric acid). Dry about 1 Gm of evipal soluble accurately weighed, to constant weight at 65°C the loss in weight is negligible.

Transfer about 0.5 Gm, accurately weighed, of the dried evipal soluble to a tared porcelain dish add 2 cc of sulfuric acid, cautiously ignite until the excess of sulfuric acid has been volatilized, repeat the ignition twice with the addition of 1 cc of sulfuric acid, add about 0.5 Gm of ammonium carbonate, ignite to constant weight and weigh as sodium sulfate the percentage of sodium corresponds to not less than 8.5 nor more than 9.4 when calculated to the dried substance.

Transfer about 0.5 Gm of evipal soluble, accurately weighed, to a suitable separator add 15 cc of water followed by the addition of 10 cc of diluted hydrochloric acid, extract the mixture with eight successive portions of chloroform using 25 cc 15 cc and six portions of 10 cc respectively, evaporate the combined chloroform extracts in a tared beaker to dryness in a stream of warm air and dry to constant weight at 65°C the amount of cyclohexenyldimethyl barbituric acid corresponds to not less than 91 per cent nor more than 92 per cent, calculated to the dried substance.

Dissolve the cyclohexenyldimethyl barbituric acid obtained as above, in 25 cc of previously neutralized alcohol add 25 cc of recently boiled and cooled distilled water and titrate with tenth normal sodium hydroxide solution, using thymolphthalein as an indicator the amount of tenth normal sodium hydroxide consumed corresponds to not less than 98.5 per cent nor more than 101.5 per cent of cyclohexenyldimethyl barbituric acid.

THEOPHYLLINE WITH ETHYLENEDIAMINE-U. S. P (See New and Nonofficial Remedies, 1941, p 583)

The following dosage forms have been accepted

Tablets Aminophylline 0.0975 Gm (1V grains)

Prepared by E. S. Miller Laboratories, Inc., Los Angeles

Tablets Aminophylline 0.195 Gm (3 grains)

Prepared by E. S. Miller Laboratories, Inc., Los Angeles

Ampul Solution Aminophylline, 24% W/V, 10 cc

Prepared by E. S. Miller Laboratories, Inc., Los Angeles

Ampul Solution Aminophylline 24% W/V in Ethylenediamine Solution 1% V/V (with Benzyl Alcohol 2% V/V), 2 cc

Prepared by E. S. Miller Laboratories, Inc., Los Angeles

PHENOLSULFONPHTHALEIN (See New and Nonofficial Remedies, 1941, p 230)

The following dosage form has been accepted

Ampuls Phenolsulfonphtalein Solution, 6 mg, 1 cc

Each cubic centimeter of solution contains 6 mg of phenolsulfonphtalein in the form of the monosodium salt

Prepared by Lakeside Laboratories, Inc., Milwaukee

MERCURIC SUCCINIMIDE (See New and Nonofficial Remedies, 1941, p 350)

Cheplin Biological Laboratories, Inc., Syracuse, N. Y.

Vial Solution Mercuric Succinimide, 1/2 gram (0.01 Gm) in each cc, 30 cc Each cubic centimeter contains mercuric succinimide 0.01 Gm, benzyl alcohol 0.01 cc and glycerin 0.013 Gm in sufficient distilled water to make 1 cc

Ampules Solution Mercuric Succinimide, 1/2 gram (0.02 Gm), 1 cc Each 1 cc ampule contains mercuric succinimide 0.02 Gm, benzyl alcohol 0.01 cc and glycerin 0.013 Gm in sufficient distilled water to make 1 cc

Vial Solution Mercuric Succinimide, 1/2 gram (0.02 Gm) in each cc, 30 cc Each cubic centimeter contains mercuric succinimide in sufficient distilled water to make 1 cc

Flint, Eaton & Co., Decatur, Ill.

Ampul Solution Mercuric Succinimide, 0.01 Gm (1/2 grain), 1 cc

LIVER EXTRACT (INJECTABLE) U. S. P-ENDO (See THE JOURNAL, March 29, 1941, page 1391, and Supplement to New and Nonofficial Remedies, 1941, page 12, under LIVER EXTRACT (INJECTABLE) U. S. P-ENDO, 10 UNITS PER CC)

The following dilution dosage forms have been accepted

Liver Extract (Injectable) U. S. P Endo (5 U. S. P units per cc), 1 cc Ampoule

Liver Extract (Injectable) U. S. P Endo (2 U. S. P units per cc), 10 cc vial

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1941, p 551)

The following additional dosage forms have been accepted

Tablets Thiamine Hydrochloride, 1 mg, 5 mg, 10 mg

Prepared by Flint, Eaton & Co., Decatur, Ill.

Ampuls Solution Thiamine Hydrochloride, 10.0 mg, 1 cc

Prepared by Flint, Eaton & Co., Decatur, Ill.

Vials Solution Thiamine Hydrochloride, 10 mg per cc, 25 mg per cc and 50 mg per cc in 15 cc vials

Prepared by Flint, Eaton & Co., Decatur, Ill.

I. V. C. Thiamine Hydrochloride Crystalline Tablets, 50 mg and 10 mg

Prepared by the International Vitamin Corporation, New York. No U. S. Patent or trademark.

THIAMINE HYDROCHLORIDE-MERRELL (See New and Nonofficial Remedies, 1941, p 553)

The following dosage forms have been accepted.

Thiamine Hydrochloride Tablets Merrell, 50 mg and 100 mg

SODIUM THIOSULFATE (See New and Nonofficial Remedies, 1941, p 503)

The following dosage forms have been accepted

Ampuls Sodium Thiosulfate (Flint, Eaton & Co.), 0.5 Gm (7 1/2 grains), 5 cc

Prepared by Flint, Eaton & Co., Decatur, Ill.

Ampuls Sodium Thiosulfate (Flint, Eaton & Co.), 1.0 Gm (15 1/2 grains), 10 cc

Prepared by Flint, Eaton & Co., Decatur, Ill.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1941, p 519)

Sulfathiazole-Lakeside.—A brand of sulfathiazole-N. N. R.

Manufactured by Lakeside Laboratories, Inc., Milwaukee. No U. S. patent or trademark.

Tablets Sulfathiazole 0.5 Gm (7.7 grains)

TETANUS ANTITOXIN BOVINE (See New and Nonofficial Remedies, 1941, p 437)

The Gilliland Laboratories, Inc., Marietta, Pa.

Tetanus Antitoxin (Bovine), Gilliland—A concentrated and refined antitoxin made from the blood serum of cattle hyperimmunized against the toxin of *Clostridium tetani*. Marketed in packages of one vial containing 1,500 units and in packages of one vial containing 10,000 units.

RINGER'S SOLUTION (See New and Nonofficial Remedies, 1941, p 389)

Ringer's Solution in Vacoliter Container Each hundred cubic centimeters contains sodium chloride U. S. P. 0.7 Gm, potassium chloride N. F. 0.03 Gm and calcium chloride U. S. P. 0.025 Gm. Marketed in bottles (Vacoliter containers) of 500 cc and 1,000 cc.

Prepared by Baxter Laboratories, Inc., Glenview, Ill., and Don Baxter, Inc., Glendale, Calif.

RIBOFLAVIN (See New and Nonofficial Remedies, 1941, p 553)

Mead's Riboflavin Tablets 1 mg

Prepared by Mead Johnson and Company, Evansville, Ind.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 10, 1942

ENROLMENT FOR SERVICE IN THE ARMY AND NAVY

Last week The Journal published an urgent request to all physicians of the United States to fill out the questionnaire published in that issue and mail it at once to Dr. Sam F. Seeley, Executive Officer of the Procurement and Assignment Service, Washington, D. C., indicating their availability to serve the nation in the present emergency. The response to this call to the medical profession to date has been highly gratifying. The following statement to that effect, with additional instructions, has been received from the Directing Board of the Procurement and Assignment Service:

The response of the physicians of the country to the Procurement and Assignment Service request for enrolment of those now ready for immediate service in the army or the navy is highly gratifying. All names are being processed, and those who meet the present demands of the Surgeon Generals will receive application forms and authority to appear for physical examination at an early date. All who are now ready for immediate duty should forward applications to the Procurement and Assignment Service at once. It is not the intention of the Procurement and Assignment Service to register every physician, dentist and veterinarian at the present time. Only those available for immediate assignments should register at this time. The physical requirements of all military, governmental, industrial and civil agencies will be published in national and state journals immediately. On the basis of this information every physician, dentist and veterinarian will be able to make a self appraisal of his physical qualifications. Within a few weeks the Procurement and Assignment Service will mail to all individuals a form on which they will be asked to state their preferences for assignment to all agencies of national defense which require medical, dental and veterinary personnel and for service in communities in public health and other civil categories. In this way every physician, dentist and veterinarian of the country will be able to lend maximum support to the national emergency. In order to meet the expanding needs of the military services, every physician immediately available for

duty should mail his application blank to the Procurement and Assignment Service at once. All others will be given an opportunity to volunteer in the near future.

Frank H. Lahey, M.D.,
Chairman.

James E. Paullin, M.D.

Harvey B. Stone, M.D.

Harold S. Diehl, M.D.

C. Willard Camalier,
D.D.S.

Sam F. Seeley, Major,
M. C., U. S. Army,
Executive Officer.

CALCIUM AND THE METABOLISM OF LEAD

Modern industry raises many questions in fields related to medicine. One of the problems of growing interest concerns the increased possibility of lead poisoning; paint pigments, tetraethyl lead in motor fuels, and spray materials used on fruits and vegetables are a few of many possible sources of exposure to lead under current ordinary living conditions. Numerous studies with a variety of analytic procedures have shown that practically all the body tissues contain measurable amounts of lead.

Of compelling interest is the similarity between the distribution and mobilization of lead and that of calcium and phosphorus. Experience with physicochemical models indicates that lead is transported in the blood as the secondary phosphate but is deposited in the bones as the insoluble tertiary phosphate.¹ Aub and his co-workers² have shown that not only is lead stored in the trabeculae of the long bones, as is the readily available calcium, but solution of parathyroid will mobilize this lead and the calcium in a parallel manner. Both roentgenographic evidence³ and the results of intravenously administered radioactive lead⁴ indicate its deposition and mobilization from those structures where shifts in calcium are likewise taking place. These and similar observations have led to the conception that lead and calcium are strikingly similar in their metabolism. In the toxic episode of lead poisoning it is advisable to immobilize the metal in the bones by promoting the concomitant deposition of calcium.⁵ Subsequent treatment with acidifying agents such as ammonium chloride will bring forth the lead and the calcium into the blood stream, and deleading thus occurs.

With the organism in negative calcium balance such as occurs on a calcium-poor regimen, it might be expected that administered lead would be prevented from localizing in the bony trabeculae. However, a recent study by Shields and Mitchell⁶ confirms earlier similar work that diets low in calcium or in phosphorus or in both promote increased lead retention. That this is due to circumstances within the gastrointestinal tract

1. Fairhall, L. T., and Shaw, C. P. *J. Indust. Hyg* 6:159 (Aug) 1924.
2. Fairhall, L. T. *J. Am. Chem. Soc.* 46:1593 (Jan) 1924.
3. Hunter, D., and Aub, J. C. *Quart. J. Med.* 20:123 (Jan) 1927.
4. Caffey, John. *Radiology* 17:957 (Nov) 1931.
5. Behrens, B., and Baumann, A. *Ztschr. f. exper. Med.* 92:251, 1933.
6. Aub, J. C. *The Biochemical Behavior of Lead in the Body*, *J. A. M. A.* 104:87 (Jan 12) 1935.
7. Shields, J. B., and Mitchell, H. H. *J. Nutrition* 21:541 (Jan) 1941.

was shown by Lederer and Bing;⁷ they found that the level of calcium in the ration exerts no influence whatever on the retention of lead when a lead salt is administered parenterally.

On the basis of current evidence, it appears that the mobilization of lead already deposited in the bones shows a striking parallel to the mobilization of calcium and that the absorption of lead from the intestine is influenced by the level of calcium in the diet. The deposition of lead in the bones appears to take place in inverse relation to that of calcium. Obviously, further study in this important field is necessary. From the point of view of public health, it is reassuring that an adequate intake of calcium and phosphorus presumably tends to protect the body against the assimilation of the small amounts of lead that are unavoidably taken into the gastrointestinal tract under ordinary conditions.

ISOIMMUNIZATION: ITS ROLE IN TRANSFUSION REACTIONS AND IN FETAL ERYTHROBLASTOSIS

For long it was believed that hemolytic transfusion reactions do not occur when patient and donor are alike with respect to the Landsteiner blood groups O, A, B and AB. In a recent paper, Wiener and Peters⁴ pointed out that there are two classes of patients for whom this dictum does not hold. The first class includes patients who have been receiving repeated blood transfusions which have stimulated the appearance in the patient's serum of immune isoantibodies directed against the donor's cells, owing to blood factors unrelated to the four blood groups. For the second class of patients this explanation does not hold, as this class includes persons who have never previously undergone transfusion. All members of the second class, however, were found to be female patients ante partum or post partum. Wiener and Peters have suggested that these also represent cases of isoimmunization, the fetus in utero supplying the foreign antigen. This explanation had previously been proposed by Levine and Stetson⁵ to explain a transfusion reaction in a case of pregnancy studied by them.

Of the blood properties which can give rise to isoimmunization, other than the factors A and B which determine the four Landsteiner blood groups, Wiener⁶ has found the Rh factor most important. While isoimmunization as a result of repeated transfusion and in pregnancy is a relatively uncommon phenomenon, the Rh factor is the most apt to be responsible when it occurs. The Rh factor was first described by Land-

steiner and Wiener⁴ in 1940 and was so named because it was detected with an immune serum against rhesus blood. The factor is present in the blood of 85 per cent of persons in the normal population, regardless of the blood groups. As Wiener and Peters have shown, transfusions of Rh positive blood to Rh negative persons is well tolerated in the great majority of persons, but with occasional patients such transfusions give rise to isoimmunization. After the first transfusion in these cases the donor's blood is eliminated from the patient's circulation with few or no symptoms. Later, however, anti Rh isoantibodies appear in the patient's serum, so that subsequent transfusions of Rh positive blood may give rise to severe or even fatal reactions. Landsteiner and Wiener⁶ have shown that the property Rh is inherited as a simple mendelian dominant. It is possible for an Rh negative mother to have an Rh positive child, namely, if the father is Rh positive. While such matings occur in about one seventh of all marriages, isoimmunization of the mother by the blood of the fetus is far less frequent. In certain rare instances, owing perhaps to some imperfection in the placenta, fetal blood escapes into the maternal circulation. As a result of such small repeated "transfusions" of Rh positive fetal blood, Rh negative mothers may produce anti Rh antibodies. Should the mother require a blood transfusion and the anti Rh isoantibodies not be detected in the cross match tests, a hemolytic reaction may result. A difficulty in the tests is that the agglutination reactions of many serums containing anti Rh isoagglutinins are not strong, but positive and negative reactions are more readily distinguished from the appearance of the sediment in the tests. Landsteiner and Wiener⁶ describe an improved method for obtaining anti Rh immune serums by injecting guinea pigs with rhesus blood.

Shortly after the report by Wiener and Peters, Levine and Katzin⁶ pointed out the close association between isoimmunization in pregnancy and pregnancy complications; Levine, Katzin and Burnham⁷ suggested that this might be the cause of fetal erythroblastosis. If an Rh negative mother with an Rh positive fetus should produce anti Rh isoantibodies and these should filter back into the fetal circulation, they might have a destructive effect on the blood of the fetus and in this way give rise to symptoms of icterus gravis neonatorum or congenital hemolytic anemia. Subsequent studies in a larger series of cases have established the correctness of this theory beyond doubt. While only 15 per cent of persons in a random population are Rh negative, 90 per cent of mothers of erythro-

7. Lederer, L. G., and Bing, F. C.: Effect of Calcium and Phosphorus on Retention of Lead by Growing Organism, *J. A. M. A.* **114**: 2457 (June 22) 1940.

1. Wiener, A. S., and Peters, H. R.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group, *Ann. Int. Med.* **13**: 2306 (June) 1940.

2. Levine, Philip, and Stetson, R. E.: An Unusual Case of Intra-Group Agglutination, *J. A. M. A.* **113**: 126 (July 8) 1939.

3. Wiener, A. S.: Hemolytic Reactions Following Transfusions of Blood of the Homologous Group: II. Further Observations on the Role of Property Rh, Particularly in Cases Without Demonstrable Isoantibodies. *Arch. Path.* **32**: 227 (Aug.) 1941.

4. Landsteiner, Karl, and Wiener, A. S.: An Agglutinable Factor in Human Blood Recognizable by Immune Sera for Rhesus Blood, *Proc. Soc. Exper. Biol. & Med.* **43**: 223 (Jan.) 1940.

5. Landsteiner, Karl, and Wiener, A. S.: Studies on an Agglutinin (Rh) in Human Blood Reacting with Anti-Rhesus Sera and with Human Isoantibodies, *J. Exper. Med.* **74**: 309 (Oct.) 1941.

6. Levine, Philip, and Katzin, E. M.: Isoimmunization in Pregnancy and the Varieties of Isoagglutinins Observed, *Proc. Soc. Exper. Biol. & Med.* **45**: 343, 1940.

7. Levine, Philip; Katzin, E. M., and Burnham, Lyman: Isoimmunization in Pregnancy: Its Possible Bearing on the Etiology of Erythroblastosis Foetalis, *J. A. M. A.* **116**: 825 (March 1) 1941. Burnham, Lyman: The Common Etiology of Erythroblastosis Foetalis and Transfusion Accidents in Pregnancy, *Am. J. Obst. & Gynec.* **42**: 389 (Sept.) 1941.

blastotic infants have proved to be Rh negative.⁸ Moreover, in many of the mothers' serums anti Rh agglutinins were detectable.

While the Rh factor has proved to be responsible for the great majority of instances of hemolytic reactions following transfusions of blood of the homologous group, a few instances have occurred in which this explanation did not hold. In these much less frequent cases other blood factors have been found to be at fault. Thus, Wiener⁹ reports 2 instances of isoimmunization of A₂ patients against A₁ blood, 1 by repeated transfusion, the other as a result of pregnancy; Wiener and his collaborators have also observed the appearance of anti O isoagglutinins in the serum of a group AB patient given group O blood; and anti P agglutinins have been found in the serum of a P negative patient given P positive blood.¹⁰ Similarly there are cases of fetal erythroblastosis in which the mother is Rh positive. Here it has been suggested that blood factors other than Rh may be responsible. For example, Levine and Polayes¹¹ have described an instance of isoimmunization in pregnancy in which the mother's serum contained an isohemolysin with reactions unrelated to Rh or any blood factor previously described. At times the situation may be complicated, as in a case recently reported by Wiener and Forer,¹² in which the serum of a group O person had two irregular agglutinins in it, one against the Rh factor, the other against agglutigen M. For this patient only group O donors with blood of type N and lacking the Rh factor could be used. Two such donors were found among 90 group O donors tested, transfusions proving successful.

The observations of Wiener and his collaborators on intragroup hemolytic transfusion reactions and of Levine and his collaborators on fetal erythroblastosis are significant from the point of view of the individuality of human blood. With the factors A₁, A₂, B, M, N, P and Rh as many as seventy-two distinct types of human blood can be identified. With the additional factors that are identifiable with post-transfusion serums and serums from mothers of infants with fetal erythroblastosis, the number of subdivisions of human blood possible is further increased, as had also been shown with the aid of irregular isoagglutinin in normal human serums.¹³ As examples one might mention the special hemolysin observed by Levine and Polayes¹¹ in a pregnancy serum and the observations of Wiener³ that there are at least two sorts of Rh factor.

8. Levine, Philip; Vogel, P.; Katzin, E. M., and Burnham, L.: Pathogenesis of Erythroblastosis Foetalis: Statistical Evidence, *Science* **94**: 371 (Oct. 17) 1941.

9. Wiener, A. S.: Subdivisions of Group A and Group AB: II. Isoimmunization of A₂ Individuals Against A₁ Blood, with Special Reference to the Role of the Subgroups in Transfusion Reactions, *J. Immunol.* **41**: 181 (June) 1941.

10. Wiener, A. S.; Oremland, B. H.; Hyman, M. A., and Samwick, A. A.: Transfusion Reactions: Experiences with More Than 3,000 Blood Transfusions, *Am. J. Clin. Path.* **11**: 102 (Feb.) 1941.

11. Levine, Philip, and Polayes, S. H.: An Atypical Hemolysin in Pregnancy, *Ann. Int. Med.* **14**: 1903 (April) 1940.

12. Wiener, A. S., and Forer, S.: A Human Serum Containing Four Distinct Isoagglutinins, *Proc. Soc. Exper. Biol. & Med.* **47**: 215 (June) 1941.

13. Landsteiner, Karl, and Levine, Philip: Isoagglutinin Reactions of Human Blood Other Than Those Defining Blood Groups, *J. Immunol.* **17**: 1 (July) 1929.

Current Comment

1942 DUES NOW PAYABLE

For the convenience of Fellows and subscribers who have not paid the 1942 dues, a colored reminder slip is enclosed in this issue of THE JOURNAL. It takes the place of a personal statement, and its use by those who have not yet paid for 1942 will result in a tremendous saving of postage and clerical work in the Headquarters office. The slip is cut so that when folded it forms a ready addressed, ready stamped envelop for check, money order or draft. It lists not only THE JOURNAL but all the special journals of the Association, with their respective subscription prices—likewise *Hygeia*, the Health Magazine. Thus payment for all publications desired may be covered with one remittance. If you have already paid for 1942, please disregard the slip.

BEHAVIOR OF GLYCERIN IN THE ANIMAL ORGANISM

Glycerin is widely employed in pharmaceutical preparations, perhaps more frequently than any other substance except water. Any toxic properties which it may possess, therefore, are important. Deichmann¹ concludes that glycerin is absorbed from the peritoneum, the gastrointestinal tract and subcutaneous tissue but that its penetration of the intact skin appears to be negligible. Toxic doses of glycerin produce characteristic signs and symptoms and in sufficient quantities can cause death. Intravenous injection of even small doses results in a transient fall in the arterial blood pressure and an increased rate and magnitude of respiration. A lethal oral dose will produce a slowly failing circulation, while a lethal intraperitoneal injection produces a stimulation of respiration and finally a sudden drop of arterial blood pressure. Death is due to the combined effects of failing circulation and respiration. Diuresis appears to be more pronounced after oral than after subcutaneous administration. A portion of absorbed glycerin is transformed in the organism into dextrose and subsequently into glycogen. Glycerin appears to exert a protein-sparing action if administered in concentrations well below the toxic level. The pathologic changes reported in cases of experimental glycerin poisoning are those of acute toxic damage to the liver, kidneys and lungs. The gastrointestinal tract may suffer after the administration of large oral doses, and the subcutaneous tissue may develop pronounced local damage at the site of injection. Although the toxic effects of glycerin as summarized are impressive, it must be pointed out, as Deichmann did, that there are only two cases on record in which glycerin has been known to produce poisoning; these were in children. The toxic effects of this substance, therefore, must be considered as clinically important only in the event of gross overdosage or in the presence of hypersensitivity.

1. Deichmann, Wilhelm: Glycerol: Behavior in the Animal Organism (A Review of the Literature), *Indust. Med.*, October 1940.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

INFLUENZA

Circular Letter No. 124

The following statement summarizing our present concepts of influenza has been prepared for the Surgeon General by the director of the Commission on Influenza of the Board for the Investigation and Control of Influenza and other Epidemic Diseases in the Army:

1. *Definition.*—Influenza is an acute respiratory disease of virus origin which occurs almost annually in epidemics of varying severity. Two distinct types (types A and B) of virus have been identified; others are suspected. The diagnosis should not be limited to outbreaks of high mortality, such as that of the autumn of 1918. The presence of influenza should be suspected when an undue incidence of unidentified, febrile, upper respiratory disease is encountered.

2. *General Features.*—The usual epidemic is characterized by its sudden appearance in a cantonment, its rapid spread to a peak in from three to four weeks, attacking from 10 to 40 per cent of the population, its low mortality, and its prompt subsidence in from six to eight weeks after onset.

In the average patient the onset is sudden, with chills or chilliness, pharyngeal irritation, generalized aches, prostration and slight dry cough. Respiratory symptoms are not prominent. The temperature reaches 100-103 F., and leukopenia or absence of leukocytosis is the rule. The febrile course lasts from three to five days, followed by relatively prompt recovery except for residual fatigue. An exaggeration of fever or an increase in severity of symptoms indicates the probability of respiratory complications, which vary from tracheitis and bronchitis to extensive pneumonia and empyema.

Complications are usually due to secondary bacterial invaders. The mortality varies with the nature and virulence of the bacterial agents. There may be rapidly fatal cases in which the virus infection is accompanied from the onset by bacterial infection; but more commonly the bacterial complications develop about the time of convalescence from the primary disease.

The virus can be recovered in experimental animals and from the nose and throat secretions of infected individuals. Tests with the patient's serum may be used to identify the disease by demonstrating a rise in antibodies specific for the type of virus present. Immunity develops in convalescence and is effective for an indefinite period, probably longer than is usually assumed.

Approximately one fourth of a population may undergo subclinical infection and during the epidemic period serve as important agents in the transmission of infection.

3. *Control.*—(a) *General Measures:* General control measures should be directed not only toward the prevention of the transmission of influenza virus but also toward the protection of incipient cases and early convalescents from secondary infection with pathogenic bacteria. The virus of influenza is transmitted through the upper respiratory tract by direct droplet infection from an infected individual or by indirect infection with discharges from his respiratory tract. Crowding is a most important factor in the spread of the disease. In the presence of an epidemic, unnecessary congregation in mess halls, recreation centers or barracks should be eliminated, and existing regulations concerning ventilation and bed space in barracks and hospitals should be carried out. If the epidemic is severe, working quarantine of small units may be desirable.

New or unseasoned troops should be segregated, and the transfer of troops to and from infected camps should be discouraged. The transfer by train or transport of bodies of troops infected with influenza is particularly hazardous. Their close

association under such conditions will result in the infection of many who would otherwise escape and in a high incidence of complications and deaths which otherwise would be avoided.

The control measures prescribed in paragraphs 2, 3 and 10, AR 40-220, should be strictly enforced. The admission and general management in hospital is clearly outlined in AR 40-245.

(b) *Specific Measures:* At present no specific control measure has been established, although vaccination methods are under investigation.

4. *Treatment.*—The treatment in uncomplicated cases of influenza is at present symptomatic. There is no evidence that chemotherapy influences the primary virus disease. The patient should be kept warm in bed for forty-eight hours after his temperature has returned to normal. Cold air frequently aggravates the irritation of the respiratory passages. Steam inhalations and soothing cough mixtures with codeine often relieve a persistent distressing cough. Mild antipyretics and sedatives may be used, but narcotics other than codeine are generally contraindicated. Fluids should be given to 3,000 cc. or more daily. The bowels should be regulated when necessary with mild cathartics or enemas. A soft diet can be given as soon as the patient's appetite will tolerate it.

The patient should resume his normal activities gradually. When secondary bacterial invaders are prevalent, protective isolation for a week or more after recovery should be given. Any unexplained rise of temperature or a return of fever should be interpreted as the onset of pulmonary disease due to pathogenic bacteria. Under these conditions adequate measures for the diagnosis of pneumonia and the determination of the infecting bacterial agent should be instituted. Chemotherapy or other available types of therapy directed against the invading bacterium should be used.

By order of the Surgeon General:

JOHN A. ROGERS,
Lieutenant Colonel, Medical Corps,
Executive Officer.

FIRST AID INSTRUCTORS—RED CROSS APPEALS FOR FUNDS

The American Red Cross has sent to San Francisco twenty experienced first aid field representatives who were dispersed at once to strategic points and set to work training lay instructors in first aid throughout the Pacific Coast states.

The lay instructor's course covers forty-five hours of class work and practical application of first aid. For those who already hold Red Cross standard and advanced first aid certificates, this period is reduced to fifteen hours. Those who qualify as instructors are authorized to teach both standard and advanced courses in emergency care of the injured. Red Cross first aid certificates will be awarded to those who successfully complete the latter courses. Doctors who are graduates of recognized medical schools may receive an instructor's appointment from the Red Cross on application to National Headquarters in Washington, D. C., or to the area headquarters in San Francisco, St. Louis and Alexandria, Va.

The Red Cross now has more than thirty-five thousand first aid instructors throughout the country who are busy meeting the demands for training in their local communities. During the past year upward of a million persons received first aid training from Red Cross instructors. Of these about one hundred thousand were residents of California, Oregon, Washington, Idaho, Utah, Arizona and Nevada.

First aid instruction is one of the Red Cross activities on behalf of civilian defense. During the past year local chapters have been organizing and training volunteer first aid detachments to be ready for immediate service in industrial establishments and residential areas in case of explosion, fire, sabotage or other incidents requiring the services of first aiders. Every effort is being made to protect defense industries by means of these first aid detachments. First aid instruction is also being furnished by the Red Cross to soldiers and sailors. This work, which embraces every conceivable type of morale building activity, among the men in uniform as well as their families, has been greatly expanded during the past year.

Because of the heavy financial burden occasioned by its war activities, the Red Cross has appealed for a special fund of \$50,000,000.

RESERVE COMMISSIONS FOR MEDICAL STUDENTS

The National Headquarters of the Selective Service System stated January 1 that Brig. Gen. Lewis B. Hershey, director of Selective Service, has advised all local boards through their state headquarters that third and fourth year students in acceptable medical schools and first year interns may obtain reserve commissions in the Army or Navy and then will be permitted to complete their medical training, including one year of internship, before being ordered to active duty. Such medical students and interns may be deferred by their local boards in class II-A pending receipt of their commissions, but all who are eligible for a commission and do not apply may be considered for classification in class I-A if they are not deferred for other reasons and are found physically qualified for general military service.

Third and fourth year medical students and interns who are rejected after applying for commissions, and also first and second year medical students and those registrants who have been accepted as students in a medical school, may be deferred in class II-A as long as their school officials certify that they give indication that they will become qualified medical practitioners, General Hershey said. He emphasized, however, that no group deferment is permissible under the law and that each case must be decided by a local board on the facts concerning the individual registrant involved.

Medical students and interns accepted by the Army are given commissions as second lieutenants pending graduation when they become first lieutenants in the Army Medical Reserve Corps. Those accepted by the Navy are commissioned as ensigns until graduation, when they become lieutenants (junior grade) in the Navy Medical Reserve Corps.

BRITISH AMERICAN AMBULANCE CORPS

Since the entrance of the United States into the war and after consultation with representatives of the allied governments, the British American Ambulance Corps has decided to concentrate its efforts in the future on supplying ambulances and a limited number of mobile canteens, leaving to other relief organizations the sending of other essential medical supplies. However, contributions will be accepted for stretchers, blankets and first aid cases to the extent that they are needed to equip ambulances. The British American Ambulance Corps will continue with no diminution of effort to raise funds for ambulances for the allied cause and will bend every effort to raise not only the number now needed but a sufficient number to use as a reserve to meet without delay any emergency that may arise. Ambulances will not be accepted, therefore, for any particular country or front. Only one particular type of ambulance will be purchased, and it is so constructed that it can do service in both tropical and cold climates. The sides and top are demountable and may be packed flat in the chassis in order to reduce space required for shipping. This standardized type of ambulance is sturdy, will attain a speed of 60 miles an hour on good roads and will stand up under desert or other rough conditions. These ambulances cost \$2,000 each.

Recently the British American Ambulance Corps has had demand from several cities in the United States for ambulances and a few weeks ago had a request from London for two hundred and fifty-six ambulances to serve with the Royal Air

Force as a result of the great expansion recently in the Royal Air Force in airplanes and personnel and not proportionately in its ambulance service. Ambulances are not included under the terms of the lend-lease bill. The ambulances donated by groups, corporations or clubs may be marked with any inscription the donor desires, but a promise cannot be made that they will be sent to any particular location.

PERCENTAGE OF CALIFORNIA REGISTRANTS REJECTED

The final figures showing the results obtained by the California boards and their physicians under the old plan of "primary selective service medical examination and classification" before presenting registrants to army examiners at induction stations, are as follows:

Of 60,839 selectees presented to induction stations 5,430 were rejected there (8.92 per cent).

Rejections for physical and mental reasons (excluding illiterates)	8.33%
Rejections for reasons other than physical or mental (includes illiterates)	0.59%

Percentage of rejections for the state..... 8.92%

Breakdown of the 8.92 per cent rejected:

	Per Cent
Eyes (vision principally).....	11.5
Teeth (number, pyorrhea, malocclusion).....	9.5
Weight (mostly underweight, very few overweight).....	4.0
Ear (chronic catarrhal otitis media, membrane).....	7.5
Cardio-vascular (heart, blood pressure, pulse).....	3.5
Spine joints	3.0
Genito-urinary (venereal, gonorrhea, syphilis, testicle)....	5.0
Abdominal organs (hernia, gallbladder, appendix, rectum)...	5.5
Nose, mouth (larynx, septum).....	2.5
Neuropsychiatric	16.5
Extremities (digits, muscles, pes planus, varicose veins, fractures)	14.0
Lungs	9.5
Endocrine (and skin).....	2.0
Other than physical (illiteracy, felonies, dishonorable discharge, inaptitude)	6.0
	100

ARMY HOSPITAL NAMED FOR GENERAL DARNALL

The hospital leased by the War Department from the commonwealth of Kentucky at Danville has been designated as "Darnall General Hospital" in honor of the late Brig. Gen. Carl Rogers Darnall, who died in Washington, D. C., Jan. 18, 1941. General Darnall was born in Texas on Dec. 25, 1867 and graduated from Jefferson Medical College in 1890. He entered the military service on Oct. 27, 1896 and his first service was at Fort Clark, Texas, as medical officer with the Twenty-Third Infantry. Later he commanded the military hospital at Iloilo, Philippine Islands. He then served from 1903 to 1913 as secretary of the faculty and instructor at the Army Medical School, Washington, D. C. During the first World War he served as executive officer in the Surgeon General's Office. In 1929 he was appointed Assistant Surgeon General with the rank of brigadier general and was serving in this capacity at the time of his retirement in 1931. General Darnall was awarded the Distinguished Service Medal for organizing and administering the Supply Division of the Medical Department during the World War. He was credited with originating the use of liquid chlorination of water when he was at the Army Medical School as professor of chemistry.

MEDICAL DEFENSE MEASURES IN THE CHICAGO AREA

At a meeting of the defense medical advisory council appointed by the mayor of Chicago, the president of the Chicago Board of Health, Dr. Herman N. Bundesen, announced the creation of a 100 mile emergency medical zone for Chicago and vicinity, including Cook, DuPage and Lake counties in Illinois and part of Lake County in Indiana. The defense medical advisory council will coordinate in this area all hospitals, dispensaries, first aid stations and training stations. The major defense of the medical defense plan called for the organization of two field units for each hospital, organization of emergency

ambulance service, the conversion of trucks into ambulances, the creation of a blood reserve, a campaign for typhoid vaccination and the inventory of all hospitals in this area, with a tabulation of the bed capacity, x-ray equipment, respirators, operating rooms and laboratories.

Chicago's first free ambulance service and mobile operating room equipped for catastrophes and emergencies went into operation on December 17 as a unit of Chicago's only all Negro hospital, Provident Hospital. This service is sponsored by the hospital as a defense measure. There will be two ambulances in this service, one with facilities for transporting 5 patients and equipped to care for 100 patients at the scene of accidents. Its special equipment includes not only four doctors, four nurses and equipment for performing operations in the field but also portable fire fighting apparatus, wrecking tools and an acetylene torch.

The officers of the various women's clubs presented to Mayor Kelly on December 16 the names of thirty-five thousand women who offered their services for defense work, and the work of classifying these women for the various chores was begun at once.

ANNUAL MEDICOMILITARY SYMPOSIUM ON NUTRITION

The annual medicomilitary symposium in the second military area will be held on Tuesday, January 13, at 8:30 p. m. in room 1316X at 90 Church Street, New York City, the general theme of the evening being nutrition in the army. Physicians, dentists, veterinarians, nurses, dietitians, students of professional schools and nutrition experts are cordially invited, as are representatives of the American Red Cross. Lieut. Col. James A. Tobey, Sanitary Corps, will discuss "Nutritional Problems in the Army," Major Louis Griessman of the veterinary reserve "Inspection of Foods in the Army," Col. Samuel A. Cohen of the Medical Corps "The Army Medical Officer and Nutrition," Col. Hyman I. Teperson of the Medical Corps "The Roentgen Ray in the Diagnosis of Nutritional Disorders" and Col. John L. Kantor of the medical corps will give a general summary. Lieut. Col. J. K. Surls of the medical corps will preside. Col. Milton I. Strahl of the medical reserve is chairman of the executive committee. There will be exhibits on army nutrition. The banquet which had been planned for this meeting has been canceled because of the emergency.

OFFICERS, SAILORS AND EMPLOYEES DONATE AMBULANCES

On Dec. 10, 1941 a cavalcade of twelve ambulances, Norfolk's newest gift to the British American Ambulance Corps, left for the United States Naval Base at Norfolk, Va., where they were officially presented to William V. C. Ruxton on the following Friday. The \$24,000 necessary to purchase these ambulances came as a donation from the officers, enlisted personnel and civilian employees of the Norfolk Navy Yard. The campaign was conducted under the direction of Mr. Herbert J. Gerst, British American Ambulance Corps chairman for Norfolk, with the cooperation of Admiral Manley H. Simons of the Navy Yard. In addition to the twelve ambulances the British American Ambulance Corps will receive an additional \$2,000 for an ambulance previously donated by the citizens of Norfolk in memory of Lieut. Comdr. Heywood L. Edwards, who went down with the U. S. Destroyer *Reuben James*.

THE ARMY MEDICAL DEPARTMENT

The history of the Medical Department of the U. S. Army commences with the siege of Boston in 1775. The Second Provincial Congress of Massachusetts Bay provided for examination of persons seeking appointment as surgeons in the colonial forces. Two surgeons and two surgeon's mates were allowed to a hospital, and one surgeon and two mates for a regiment in the field. No method for the evacuation of battlefield casualties existed, and none was perfected until the Civil War, when a surgeon of the Union forces, Jonathan Letterman,

devised a system that has become the basic pattern of the field medical service of all the great powers.

In the first issue of Army Regulations, in 1779, the provisions governing medical service consisted of little more than an injunction to provide sick and wounded soldiers with fresh straw on which to lie, and prescribed, in event of death, the procedure to be followed.

The vast army medical organization of today is equipped and trained for field service with hospitals costing \$160,000,000 and with a budget of \$85,000,000 for the current year. However great the changes since the Revolutionary War, the mission of the Medical Department endures unaltered. Army Regulations describe this mission as "conservation of man power." The accomplishment devolves on three factors: (1) selection and enrolment of those physically fit for military duty, (2) maintenance of health of military personnel by application of preventive medicine and (3) furnishing to the disabled such aid in the form of evacuation and hospitalization as will speedily restore them to health and fighting efficiency.

REFRESHER COURSES FOR NURSES

Graduate nurses in the Detroit area who have not recently been active may review their professional skills in a course to be given by Wayne University at St. Mary's and Evangelical Deaconess Hospitals, Detroit, beginning January 12. One hundred and sixty-one persons have already taken advantage of five similar courses, already completed. There are no fees, as funds have been made available by the State Board of Control for Vocational Education and the W. K. Kellogg Foundation. Applicants must be graduate nurses living in Michigan. Registrations are now being taken by Mrs. Lulu St. Clair Blaine, director of the Community Nursing Bureau and registrar for the course, at 51 West Warren, Detroit.

BRITISH WAR RELIEF ASSOCIATION OF NORTHERN CALIFORNIA

The British War Relief Association of Northern California reports that at the end of another year only one shipment among large quantities of medical and surgical supplies that have been shipped to the British Red Cross has failed to reach its destination. Through the cooperation of the San Francisco County Medical Association, dried blood plasma has been sent to the British commands in Singapore and Hongkong, and portable transfusion kits were placed on board H. M. S. *Liverpool* and *Orion*. As an example of the interest in British war relief in northern California, Dr. John R. Upton cites the Hanford Union High School, whose gift largely made it possible to place the transfusion kits aboard the *Orion*.

SYMPOSIUM ON MILITARY MEDICINE

The Long Island College of Medicine, Brooklyn, sponsored a symposium on military medicine, December 3. The speakers were:

Rear Admiral Charles M. Oman, M. C., U. S. Navy, commanding officer, U. S. Naval Medical Center, Washington, D. C., Medical Tactics as Applied to Naval Warfare.

Capt. Paul M. Albright, M. C., U. S. Navy, Washington, D. C., Eyes of the Navy (illustrated with sound film).

Dr. Philip D. Wilson, New York, Fractures in Modern War.

Capt. Dickinson S. Pepper, M. R. C., U. S. Army, Washington, D. C., The Medical Student and the Military Service.

Comdr. Page O. Northington, flight surgeon, U. S. Navy, New York, Aviation Medicine.

OFFICE OF SURGEON GENERAL MOVED

The office of the Surgeon General of the United States Army in Washington, D. C., has been moved from the new Social Security Building, Fourth and C streets S.W., to 1818 H Street N.W.

ORGANIZATION SECTION

OFFICIAL NOTES

FOURTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Sponsored by the Council on Industrial Health of the American Medical Association, January 12-14, at the Palmer House, Chicago: Stanley J. Seeger, M.D., Chairman, Texarkana, Texas; Harvey Bartle, M.D., Philadelphia; Leverett D. Bristol, M.D., New York City; Warren F. Draper, M.D., Washington; Philip Drinker, Boston; Leroy U. Gardner, M.D., Saranac Lake, N. Y.; Raymond Hussey, M.D., Baltimore; Henry H. Kessler, M.D., Newark; Anthony J. Lanza, M.D., New York City; Robert T. Legge, M.D., Berkeley, Calif.; C. W. Roberts, M.D., Atlanta; Clarence D. Selby, M.D., Detroit, and C. M. Peterson, M.D., Secretary, Chicago.

MONDAY MORNING, 9:00

REGISTRATION. NO FEE. RED LACQUER ROOM

MONDAY MORNING, 9:45

STANLEY J. SEEGER, M.D., PRESIDING

Report of the Council on Industrial Health.

STANLEY J. SEEGER, M.D., Texarkana, Texas.

Medical Aspects of Vocational and Industrial Training.

W. A. SAWYER, M.D., Rochester, N. Y.

Chairman, Committee on Industrial Health, Section on Preventive and Industrial Medicine and Public Health, American Medical Association.

The Physiology of Work.

A. C. IVY, M.D., Chicago.

Professor of Physiology, Northwestern University School of Medicine.

LECTURE ON INDUSTRIAL MEDICINE TUBERCULOSIS IN INDUSTRY—A RESUMÉ

LEROY U. GARDNER, M.D., Saranac Lake, New York.

Director, The Saranac Laboratory for the Study of Tuberculosis.

Procurement and Assignment of Physicians for Industry.

SAM F. SEELEY, M.D., Washington, D. C.

Executive Officer, Procurement and Assignment Service, Office of Defense Health and Welfare Services.

RED LACQUER ROOM

MONDAY AFTERNOON, 2:30

WARREN F. DRAPER, M.D., PRESIDING

A Dental Program for Industry.

R. M. WALLS, D.D.S., Bethlehem, Pa.

Chairman, Committee on Economics, American Dental Association.

Industrial Dermatoses.

A Report by the Committee on Industrial Dermatology, Section on Dermatology and Syphilology, American Medical Association.

C. GUY LANE, M.D., Chairman

CHARLES C. DENNIE, M.D.

JOHN G. DOWNING, M.D.

HARRY FOERSTER, M.D.

EDWARD A. OLIVER, M.D.

MARION SULZBERGER, M.D.

The Panel System in Workmen's Compensation Administration.

DAVID J. KALISER, M.D., New York City.

Director, Committee on Workmen's Compensation, Medical Society of the State of New York.

Mass Roentgenography of the Chest for the United States Army.

MAJOR ALFRED A. DE LORIMER, M.C., Washington, D. C.

Director, Department of Roentgenology, Army Medical School.

RED LACQUER ROOM

MONDAY AFTERNOON, 2:30

LEVERETT D. BRISTOL, M.D., PRESIDING

SYMPOSIUM ON UNDERGRADUATE INDUSTRIAL MEDICAL EDUCATION

Present Problems in Curriculum Adjustment.

RAYMOND B. ALLEN, M.D., Chicago.

Executive Dean, Chicago Colleges, University of Illinois.

Industrial Health—A Separate Discipline.

T. LYLE HAZLETT, M.D., East Pittsburgh, Pa.

Professor of Industrial Hygiene, University of Pittsburgh School of Medicine.

Correlation of Industrial Hygiene Instruction with Other Clinical Training.
DONALD E. CUMMINGS, Denver.
Director, Division of Industrial Hygiene, University of Colorado School of Medicine and Hospitals.

The Industrial Clinical Clerkship.

FRED J. WAMPLER, M.D., Richmond.

Professor of Preventive Medicine, Medical College of Virginia.

Industrial Experience in the Internship.

WILL F. LYON, M.D., Chicago.

Assistant Professor of Surgery, University of Illinois College of Medicine.

The Occupational Disease Clinic.

MILTON H. KRONENBERG, M.D., Chicago.

Assistant Professor of Bacteriology and Public Health, University of Illinois College of Medicine.

ROOM 17

MONDAY EVENING, 6:30

STATE SOCIETIES DINNER AND ROUND TABLE

ANTHONY J. LANZA, M.D., PRESIDING

An informal dinner and round table discussion, intended primarily for committees on industrial health in state and county medical societies, will be held. Topics and discussion leaders will be:

Professional Relations.

ANTHONY J. LANZA, M.D., New York City.

Chairman, Committee on Professional Relationships, Council on Industrial Health, American Medical Association.

Industrial Health and the War.

CLARENCE D. SELBY, M.D., Detroit.

Chairman, Subcommittee on Industrial Health and Medicine, Health and Medical Committee, Federal Security Agency.

Visiting Nurses in Industry.

MISS JOANNA JOHNSON, R.N., Milwaukee.

Chairman, Industrial Nursing Section, National Organization for Public Health Nursing.

Progress in Official Agencies.

J. J. BLOOMFIELD, Bethesda, Md.

Chief, States' Relations Section, U. S. Public Health Service, National Institute of Health.

Postgraduate Education in Industrial Health.

WALTER L. BIERRING, M.D., Des Moines.

Commissioner, State of Iowa Department of Health.

CRYSTAL ROOM

TUESDAY MORNING, 9:30

HENRY H. KESSLER, M.D., PRESIDING

Conservation of Manpower in Connecticut.

CLIFFORD KUH, M.D., New Haven.

Chairman, Committee on Industrial Health, Connecticut State Medical Society.

Health Education for Industrial Workers.

LEVERETT D. BRISTOL, M.D., New York City.

Chairman, Committee on Education and Publications, Council on Industrial Health, American Medical Association.

LECTURE ON TRAUMATIC SURGERY WOUND HEALING

EDWARD L. HOWES, M.D., New York City.

Associate Professor of Surgery, Columbia University College of Physicians and Surgeons.

The Field of Industrial Ophthalmology.

A Report by the Committee on Industrial Ophthalmology, Section on Ophthalmology, American Medical Association.

ALBERT C. SNELL, M.D., Chairman.

ARTHUR CULLER, M.D.

HEDWIG S. KUHN, M.D.

Placement of the Worker in Industry.

JOSEPH TIFFIN, Ph.D., Lafayette, Ind.

Professor of Industrial Psychology, Purdue University.

RED LACQUER ROOM

TUESDAY AFTERNOON, 2:30

ROBERT T. LEGGE, M.D., PRESIDING

Conservation of Hearing in Industry.

C. C. BUNCH, Ph.D., Evanston, Ill.

Department of Speech Reeducation, School of Speech of Northwestern University.

Recent Trends in Physical Examinations Under Civil Service.

VERNE K. HARVEY, M.D., Washington, D. C.

Medical Director, U. S. Civil Service Commission.

Vitamin Administration in Industry

A Report Prepared by Representatives of the Council on Foods and Nutrition and the Council on Industrial Health

J S MCLESTER, M D
GEORGE R COWGILL, Ph D
R M WILDER, M D
LEVERETT D BRISTOL, M D.
LEROY U GARDNER, M D
CLARENCE D SELBY, M D

Medical Service Plans for Small Industry

MYER S BLOOM, M D, Binghamton, N Y

RED LACQUER ROOM

WEDNESDAY, JANUARY 14

CLINICAL PROGRAM

University of Illinois College of Medicine
1853 West Polk Street, Room 423
Chicago

DAVID JOHN DAVIS, M D, PRESIDING

9 30 A M

Pulmonary Capacity Tests in Health and Disease Demonstration

GEORGE E WAKERLIN, M D, Professor of Physiology

Difficulties and Fallacies of Interpretation of Chest X Ray Films Demonstration

ADOLPH HARTUNG, M D, Professor of Radiology

Practical Points on Patch Testing in Occupational Dermatitis Demonstration

LEONARD T WEBER, M D, Associate Professor of Dermatology

Urinary, Blood and Other Tests of Value in Cases of Industrial Toxicology Demonstration

WILLIAM D McNALLA, M D, Coroner's Chemist, Cook County, Chicago

2 00 P M

MILTON H. KRONENBERG, M D, PRESIDING

Evaluating the Traumatic Abdomen.

CHARLES A PUESTOW, M D
Associate Professor of Surgery

Dental and Oral Manifestations of Occupational Origin

ISAAC SCHOUR, D D S, Ph D, Professor of Dental Histology, and
BERNARD SARNAT, D D S, M D College of Dentistry

The Industrial Herma—Is It a Cause for Rejection?

WILL F LYON, M D
Associate Professor of Surgery.

The Occupational Anemias

CARROLL BIRCH, M D
Assistant Professor of Medicine

Special Events

WEDNESDAY, JANUARY 14

Field trips have been arranged for a limited number of physicians registered at the Fourth Annual Congress on Industrial Health who are interested in details of industrial medical

department administration These field trips are available only to citizens of the United States Those who wish to take the trips should apply for cards at the Registration Desk of the Congress on Monday or Tuesday, January 12-13

WESTERN ELECTRIC COMPANY
HAWTHORNE WORKS

Cicero Ave and 24th Street, Chicago

10 a m INSPECTION OF PREEMPLOYMENT PHYSICAL EXAMINATIONS UNIT AND MAIN HOSPITAL

1 p m LUNCHEON IN MAIN RESTAURANT

1 30 p m DISCUSSION OF THE WORK OF THE PERSONNEL COUNSELING DIVISION

(Bus transportation will leave Palmer House, Wabash Avenue Entrance, about 9 o'clock Wednesday morning)

CARNEGIE ILLINOIS STEEL CORPORATION
GARY, INDIANA

Clinics and Demonstration in Surgical Department

10 30 a m VISIT TO GARY WORKS EMERGENCY HOSPITAL
(Surgical Rooms Dental Department, Physical Therapy Department, X Ray Department, Preemployment Physical Examinations Department)

11 30 a m TOUR OF GARY WORKS

Mr S M Jenks, General Superintendent of Gary Works

12 30 p m LUNCHEON IN LUNCH CLUB

Mr S M Jenks, Toastmaster

1 30 p m DISCUSSION OF SAFETY METHODS, INCLUDING RESUSCITATION METHODS

Mr Earl Tyler

J C Donchess, M D

TREATMENT OF FRESH WOUNDS

J C Donchess, M D

VALUE OF DENTAL HYGIENE

H R Klieber, D D S

TREATMENT OF BURNS—COLORED MOVING PICTURE

C R Zeiss, M D

PREVENTION AND TREATMENT OF HEAT SICKNESS—COLORED SOUND PICTURE

RICHARD J BENNETT JR, M D

DEMONSTRATION OF SPLINTS AND APPLIANCES

F M Merritt, M D

FRacture MANAGEMENT, INCLUDING COMPOUND FRACTURES

Philip H Kreuscher, M D, and Staff

(Transportation will be provided, leaving the Palmer House, Wabash Avenue entrance, at 9 o'clock Wednesday morning)

THE ATLANTIC CITY SESSION

Applications for Space in the Scientific Exhibit

Applications for space in the Scientific Exhibit at the Atlantic City session, both for exhibits and for motion pictures, close on January 20 Application blanks may be obtained from the section representatives or from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago

FEDERAL INCOME TAX ON ACCOUNTS RECEIVABLE

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION

Prior to 1934, if a taxpayer died who had been on a cash receipts and disbursements basis for federal income tax purposes, the collectible accounts outstanding on his books at the time of death were not subject to income tax, and most physicians use this method in reporting their incomes for federal taxation Income tax was not paid on such accounts by any one, even though each account was collected in full after the taxpayer's death The Congress in 1934 acted to close this gap in the income tax structure by passing an amendment to the income tax act which now appears as a part of section 42 of the Internal Revenue Code

In the case of the death of a taxpayer there shall be included in computing net income for the taxable period in which falls the date of his death amounts accrued up to the date of his death if not otherwise properly includible in respect of such period or a prior period

Under this amendment, if a federal income taxpayer dies during the tax year, who has customarily executed his return on a cash receipts and disbursements basis, the return for the tax year of death must include as income not only the cash receipts but also a fair value of the outstanding accounts on the books of the taxpayer at the time of his death At the

same time that the Congress enacted this amendment it also amended section 43 relating to the period for which deductions and credits may be taken by a taxpayer by providing that—

In the case of the death of a taxpayer there shall be allowed as deductions and credits for the taxable period in which falls the date of his death, amounts accrued up to the date of his death (except deductions under section 23 (o)) if not otherwise properly allowable in respect of such period or a prior period

These two amendments were of course complementary The overall result is that, for the year of death of a taxpayer who has been on a cash receipts and disbursements basis for federal income tax purposes, outstanding accounts must be reported as income and accrued deductions and credits may be taken except deductions under section 23(o) relating to charitable and other contributions

The applicability of the amendment to section 42 to physicians was aptly illustrated in a case abstracted in THE JOURNAL on May 24, 1941, page 2426¹ In that case a physician who was engaged in the practice of medicine in a partnership died,

¹ Pfaff et al v Commissioner of Internal Revenue, 113 F (2d) 114, 61 S Ct 783

dissolving the partnership. The agreement under which the partnership operated entitled the deceased physician to share in the book accounts of the partnership to the extent of \$27,000, face value. The local collector of internal revenue determined that a fair appraisal of the decedent's interest in the partnership accounts was about one fifth of the face value and that this amount was properly includible as income for the year in which the physician died. The Supreme Court of the United States upheld the collector's determination. The interest of the physician in the outstanding accounts of the partnership was not subject to tax at its face value but on the basis of a fair appraisal of that interest. The local collector of internal revenue undoubtedly took into consideration that some of the accounts were not collectible at all and that others were collectible only in part.

While it may possibly be conceded that the situation that existed prior to 1934 with respect to the taxability of the outstanding accounts of the taxpayer at the time of his death justified remedial legislation, yet the remedy that was devised seems to be unfair to the taxpayer who has been on a cash receipts and disbursements basis. The result is that the income of the taxpayer is built up artificially for the year of death by the inclusion of uncollected accounts—accounts on which the taxpayer did not realize any income whatsoever prior to his death. The ordinary effect of the amendment to section 42 is to subject the taxpayer to higher surtax rates, with a large increase in the amount of income taxes payable for the year of death as compared with preceding years. This increase may readily impose an undue hardship on the estate of the taxpayer to provide sufficient funds to pay the tax.

Whether or not anything can be done to induce Congress to remedy the situation created by the 1934 amendment is still a question. An effort is being made, however, to obtain the enactment of corrective legislation. If section 42 could be amended to make the outstanding accounts on the books of a taxpayer at the time of his death taxable under the federal income tax law as such accounts are collected, rather than taxable as of the date of death of the taxpayer, some relief would be afforded.

Pending possible action by the Congress, several suggestions have been offered as to procedures that a physician may adopt during his lifetime to lighten the income tax load on his estate created by reason of the inclusion of the outstanding accounts as income.² Since the effect of section 42 is felt ordinarily by the estate of a physician who has been on a cash receipts and disbursements basis, consideration might be given by a physician to changing over from that basis to an accrual basis during his lifetime. The advisability of effecting such a change, however, is questionable. First, a taxpayer who has been on a cash receipts and disbursements basis cannot change over to an accrual basis without obtaining the consent of the Commissioner of Internal Revenue. Second, a taxpayer on an accrual basis must keep his books in a much more detailed manner than is otherwise required and the procedure for reporting income on that basis is complicated. Also, unless a physician who has been on a cash receipts and disbursements basis arranges to close out all of his outstanding accounts before

changing over to the accrual basis, he might be faced with the demand to pay taxes on such outstanding accounts for the year when the change-over is effective and would thus raise the same problems that now arise under section 42, on his death. Omitting from consideration, therefore, any change in the method used by a physician in reporting his income for federal income tax purposes, a physician may during his lifetime to some extent lessen the harsh effects of the amendment to section 42.

A physician should refrain from entering on his books accounts due from patients when the accounts are of doubtful collectibility or known to be uncollectible. The estate may have trouble in proving that an account is bad and in getting an allowance on it, resulting in the payment of income tax on an account which will, in fact, never be collected. A physician should write off known bad accounts at least annually. If bad accounts are carried on the books for years, the estate of the taxpayer will be subjected to the necessity of proving the uncollectibility of the accounts. Such evidence may be difficult to procure. Some physicians follow a practice of entering on their books charges for services rendered to patients who are admittedly charity cases, even though there is no intention to collect or to attempt to collect the charges. Whatever reason a physician may have for doing this, the practice will complicate the duties of the administrator or executor of the estate of the deceased physician who has followed the practice. The administrator or executor may not have any way of determining, from the books of the taxpayer, whether a particular account represents a purely charity case. This will lead to an attempt to arrive at an estimated fair value of the account for income tax purposes, despite the fact that the services were rendered with a definite understanding between the physician and the patient that they were in the category of a charity. Not only may such a practice give rise to misunderstandings between the patient and the estate, but the administrator or executor may have difficulty in convincing the collector of internal revenue of the intent of the physician to omit charge for his services even though a book entry was made indicating a charge.

It has been suggested too that a physician should keep in his files, readily available for use by his estate on his death, all procurable information which will be of aid in making a determination with respect to the collectibility or uncollectibility of an account of a particular patient. Information of this kind may be obtained from the patient or it may come to the notice of the physician from other sources. Finally, if the book accounts of the physician represent a substantial amount, he should anticipate the possibility that on his death a substantial income tax may be payable, by setting aside sufficient cash to take care of the taxes or by providing insurance to cover them. Otherwise the estate may have to be liquidated at a sacrifice to provide the necessary cash to pay the taxes. A physician will therefore do well to consult an attorney or an accountant for the purpose of estimating the amount of such taxes, so that he may make adequate provisions during his lifetime to prevent any unnecessary strain on his estate after his death.

2. Wisconsin M. J. 40: 1151 (Dec., 1941).

MEDICAL ECONOMIC ABSTRACTS

CALIFORNIA PHYSICIANS' SERVICE

Two years of experience have brought to light many unforeseen features of the California Physicians' Service. This was inevitable and expected. The board of trustees submitted a report summarizing the experiences and introducing some significant changes in the operation of the plan.¹ At the present time the plan

has thirty thousand members. Owing to its pioneer character, this plan could find no pattern on which to base its policy. An abstract of the report follows:

OUR OBJECTIVES

During these past two years we have been trying to do two things: first, to determine the possibility, the cost and the mechanics of administration of an unlimited free choice medical service plan and, second, to run a businesslike operation which would pay the doctor a reasonable fee for his service. We have accomplished the first objective, but only at some sacrifice of the second.

1. California Physicians' Service—Report to Professional Members: Announcement of Changes in Plan, California & West. Med. 55: 268 (Nov.) 1941.

Under the full coverage contract California Physicians' Service sets no maximum limit on the quantity or quality of care that the doctor may wish to extend, except the limit of one year's treatment in any single illness or injury. This contract was offered to the public as an example of what the medical profession felt that a health service plan should be. It was necessary to determine the change in the habits of people and in their attitudes toward the use of medical service when they had unlimited access thereto.

Our membership of thirty thousand is scattered throughout the state, with representation in every county. This is sufficient to give us an honest sample of experience with California medicine on a free and open access basis.

We must also devise new plans which will produce a more equitable fee for the professional services performed and which, combined with the full coverage plan, will not require a heavy contribution from the profession. This contribution will be relatively small in 1940 and 1941.

Our actual administrative expenses are well below the original maximum set for this purpose, and with increasing volume we can expect still further betterment.

FACTS ESTABLISHED

In our study of the full coverage contract and our experience thereunder, we find certain facts:

1. Our incidence of illness averages better than 17 per cent, that is, almost one fifth of our total membership is under treatment each month. This is much higher than the predictions based on any surveys or other static forms of measurement.

2. The extent of service rendered to these patients is such that, on the average, medical service costs are equal to one unit of service per dues paying member per month. An extremely large part of the services required by beneficiary members is for minor ambulatory illnesses and for chronic conditions.

3. Of the cases under treatment in a single month, nearly 40 per cent are continued from the previous month.

It is a very reasonable assumption that the high frequency of the use of the service, the high proportion of minor illnesses and the dragging on of these cases is the result largely of a complete lack of responsibility on the part of the beneficiary. He need not count cost in any fashion but merely has to present himself to the doctor and ask for whatever may be available.

4. Fifty-six per cent of our membership is composed of women, who require almost 75 per cent of the care extended.

5. Too high a percentage of all membership has been secured in the white collar classes and we have not been able to secure a sufficient percentage in the industrial groups.

These last two items confirm the necessity for our expansion into new fields in order to secure a proper balance of low income members in our service.

6. There does not seem to be any evidence of "chiseling" on the part of professional members to any significant degree. There is no excess of services in any particular district in terms of number of patients treated or in terms of quality of service rendered per patient.

POSSIBLE SOLUTIONS

With these facts in our possession we can plan for betterment. We have three possible solutions: (1) raising dues, (2) inserting some elements of cost sharing, (3) a low cost limited plan.

Item 1 does not propose a very practical solution by itself. Raising dues would no doubt eliminate a considerable number of our present members, and such elimination would be largely

among the low income members and not among the higher income members, who have less need for the protection of the service. However, we may do something to raise the unit value without unfairly affecting the membership as a whole. Women require 20 per cent more medical care, in proportion to their number, than the men. It seems reasonable, then, that there should be an adjustment of rates for women to correct this situation.

Item 2 may be the source of considerable betterment. We propose that some responsibility shall be put on the member so that he may feel a share of the burden in direct proportion to his use of the service.

Item 3 is the most important with respect to policy and with respect to actuarial results. The high rate of dues necessary for the full coverage resulted in automatic selection of the "white collar" groups, who were the first to recognize the benefits to be secured through this service. Therefore, in order to correct this, we must now offer a low price plan that will attract the low income and industrial worker.

One of the most important factors we need to balance out the whole is volume, and volume can be secured with safety under limited plans which include only predictable and insurable factors. In this expansion we shall have the benefit of the experience of Eastern and Middle Western medical service associations. These organizations have reported fairly satisfactory experience with this type of contract. They have been able to secure very ready acceptance from the low income industrial groups of these limited service plans. If we can acquire volume under these contracts, it will put us definitely and safely into the low income field. These industrial groups have not been educated to pay for a complete medical service, but, in the experience of other medical service associations, once they have had the limited plan for a reasonable period of time they manifest interest in the broader plans.

Therefore we intend to put forth all of our effort on the acquiring of groups in the industrial field under this type of contract, limiting our acquisition activities in the full coverage plan to the two visit deductible contract only.

CHANGES MADE BY TRUSTEES

The following changes in policy were made at the meeting of the Board of Trustees on September 20:

1. A raise in the dues for women in all new groups effective Oct. 1, 1941, and raises in dues for women in existing groups according to our experience and as the contracts expire.

2. A moratorium on the sale of full coverage contracts, limiting the sale of this service to the two visit deductible contracts only (wherein the member pays the cost of the first two visits).

3. Authorization to the secretary to cancel or modify contracts with existing groups when experience indicates abuse of the service.

4. Authorization to the executive committee to develop means for the inclusion of dependents of the wage earner under the limited surgical plan.

5. Direction to the Acquisition Committee to place all its emphasis on the limited surgical contract in future acquisition.

The question naturally arises as to the over-all effect of these changes. The board of trustees feels that the modification of our full coverage contract and this expansion into new fields will result in the following:

1. We will modify our full coverage plan and we will eliminate unsatisfactory groups.

2. We will reach a new section of the population in the low income industrial groups.

3. We will balance the ideal full coverage with the business-like limited coverage.

4. We will extend our service to the industrial worker and his family, whose need for protection is much greater.

REPORT OF UNITED STATES CHILDREN'S BUREAU ADVISORY COMMITTEE MEETINGS

The Maternal and Child Health and Crippled Children's Advisory Committees of the Children's Bureau met in Washington, D. C., Dec. 1 and 2, 1941, under the chairmanship of Dr. Horton Casparis and Dr. Robin C. Buerki. The two committees met together for the first time this year and included thirty-eight physicians, four dentists, thirteen nurses, four medical social workers, one nutritionist, one physical therapist and one special educator:

Physicians

Fred L. Adair
Carl E. Badgley
S. Josephine Baker
W. W. Bauer
M. O. Bousfield
James Barrett Brown
Robin C. Buerki
Horton Casparis
A. J. Chesley
John S. Coulter
Bronson Crothers
Hester B. Curtis
M. Edward Davis
Robert L. DeNormandie
Eva F. Dodge
Clifford G. Grulee
Henry F. Helmholz
Ruth Jackson
T. Duckett Jones
Albert D. Kaiser
George W. Kosmak
Joseph I. Linde
George M. Lyon
Alice F. Maxwell
Hugh McCulloch
Frank L. McPhail
O. L. Miller
Robert B. Osgood
John R. Paul
Alice N. Pickett
E. D. Plass
Louis Specker
George S. Stevenson
Clifford Sweet
Felix J. Underwood
Joseph S. Wall

Philip F. Williams
W. C. Williams

Dentists

Floyd H. DeCamp
A. LeRoy Johnson
Guy S. Milberry
Lon W. Morrey

Nurses

M. Corinne Bancroft
Mary P. Billmeyer
Hazel Corbin
Gertrude R. Folendorf
Elizabeth G. Fox
Lalla Mary Goggans
Amelia Grant
Nellie X. Hawkinson
Olivia T. Peterson
Florence L. Phenix
Marion W. Sheahan
Jessie L. Stevenson
Katharine Tucker

Medical Social Workers

Zdenka Buben
Ruth Emerson
Edith I. Epler
Ruth E. Lewis

Nutritionist

Lydia J. Roberts

Physical Therapist

Mildred Elson

Special Educator

Hazel C. McIntire

Many of the administrative problems of these health and medical care programs are closely related. The Divisions of Maternal and Child Health and Crippled Children of the Children's Bureau had been organized July 1, 1941 into a single Division of Health Services under the direction of Dr. Edwin F. Daily.

A progress report of the maternal and child health services throughout the country was presented by Dr. Hart E. Van Riper, assistant director for maternal and child health, Division of Health Services, and a progress report of the Crippled Children Services throughout the nation was presented by Dr. A. L. Van Horn, assistant director for crippled children, Division of Health Services. Copies of these reports may be secured from the Children's Bureau. These reports contain an analysis of state programs involving expenditures last year of \$15,664,376 under plans approved by the Children's Bureau.

The medical members of the advisory committees gave special consideration to the qualifications recommended for physicians participating in these programs. Representatives of the American Osteopathic Association were invited to advise the committees concerning the education, training and experience in pediatrics, obstetrics and orthopedics of the members of their professions. The advisory committees of the Children's Bureau after hearing these representatives recommended that the Children's Bureau make no change in its present policy of being guided by the previous recommendations of the advisory committees with respect to qualifications for physicians participating in these programs until a committee appointed by the chairman has an opportunity to study the training and qualifications of osteopathic physicians and report their findings to the Maternal and Child Health and Crippled Children's Advisory Committees of the Children's Bureau for further consideration.

Problems relating to the medical, dental, nursing, medical social and hospital services under the maternal and child health and crippled children's programs were discussed and many recommendations made for future guidance of the Children's Bureau in the administration of these programs. It was recommended that the Children's Bureau appoint a dental consultant to advise with the state agencies on the dental service in both the maternal and child health and crippled children's programs. The need for additional well trained physical therapists was discussed as it related to services for crippled children. The need for the development of child guidance services as a part of the total health program for children was discussed at some length.

Information relating to health and welfare problems of mothers and children in some of the areas most affected by defense activities was presented to the advisory committees. Methods of safeguarding the health and welfare of mothers and children in these areas were discussed and the working relationship of the Children's Bureau with the Office of Civilian Defense and with the Office of Defense, Health and Welfare Services was outlined. Dr. George Baehr, director of the medical service of the Office of Civilian Defense, described the functions of his office in helping various states and localities organize emergency medical services for civilian protection in the event of belligerent action. The work of the joint committee studying the problem of evacuation of civilians in case of need was presented by Dr. Eliot, secretary of the committee.

Major Seeley, executive officer of the Procurement and Assignment Service of the Office of Defense, Health and Welfare Service, presented a report on the development of this new service, which has been created to assist in securing physicians, dentists and veterinarians needed by the military forces and at the same time to protect the civilian population to the greatest possible extent.

The problems of providing health services in the states for minority groups and for nonresidents were outlined and recommendations made to the effect that all children irrespective of race, religion or residence should be given the same consideration.

BRITISH MEDICAL PLANNING

The conference of representatives of the Home Divisions of the British Medical Association was held in London, beginning September 11, through the following day.¹ Representatives were present from nearly all the divisions of Great Britain and northern Ireland. The question of the future organization of the medical profession seems to have dominated the discussion. One speaker spoke on "the chaotic condition of the health services of this country. There was a complete lack of coordination. Government departments vied with each other in efforts at control of various services throughout the country. The lack of order and system involved a very serious wastage of resources, both financial and administrative. Any person or corporation that could produce out of this chaos a comprehensive, well coordinated system of health services would deserve well of the country." He offered a resolution which with slight amendments was adopted and read as follows:

That in the opinion of this meeting the family and the family doctor of the patient's choice still constitute the primary essential unit in the health services of this country, and that the Medical Planning Commission be invited to regard this as a fundamental principle.

There was much discussion of the extension of medical benefit to a new insurance group and a motion was offered, which was declared out of order, that the insurance practitioners be advised not to undertake this service. A motion was carried complaining that the Insurance Acts Committee had failed to keep local committees adequately informed during the negotiations as to the changes in the insurance conditions. A resolution expressing "complete dissatisfaction with the recent action of the Insurance Acts Committee in its negotiations with the Ministry of Health" was carried by a vote of 71 to 56.

1. Conference of Representatives of Home Divisions, Brit. M. J. Supplement, Sept. 20, 1941, p. 49.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Dr. Austin Acting State Health Officer.—Dr. Burton F. Austin, Montgomery, chief of the bureau of hygiene and nursing of the state department of health, has been appointed acting health officer of Alabama, pending a permanent selection to succeed the late Dr. James N. Baker, Montgomery.

CALIFORNIA

Society News.—Dr. William Edward Chamberlain, Philadelphia, addressed the San Francisco County Medical Society, December 2, on "Role of Fluoroscopy in Medicine."—The Los Angeles Society of Neurology and Psychiatry was addressed, December 17, by Drs. William T. Grant and Leo J. Adelstein on "Quantitative Methods in Neurologic Diagnosis" and "Surgical Treatment of Syringobulbia," respectively. Both are from Los Angeles.

Laboratory for Research in Ophthalmology.—The University of California recently opened a new laboratory to be used for pathology and research in ophthalmology, to be jointly directed by the division of ophthalmology in conjunction with the divisions of ophthalmology and pathology. Dr. Michael J. Hogan, San Francisco, has been made director of the new unit. The laboratory was made possible by a fund of \$70,000 known as the Charles Taylor Reeves Foundation, the income from which is to be used in the study of diseases of the eye. Actual construction was accomplished through a donation of Mrs. E. S. Heller.

CONNECTICUT

Changes in Health Officers.—Dr. Thomas J. Bergin, Cos Cob, has been appointed full time health officer of the town of Greenwich.—Dr. Albert E. Childs, Litchfield, has succeeded Elton R. Skilton, as health officer of Morris.—Dr. Philip E. Schwartz has been appointed health officer of Portland, succeeding Dr. John R. Tarrant.—Dr. Ernest R. Pendleton has been appointed health officer of East Granby and Hartland, succeeding, respectively, Adolph Viets and Edward A. Gaylord.

DISTRICT OF COLUMBIA

Course in Aviation Ophthalmology and Medicine.—The George Washington University School of Medicine, Washington, announces a postgraduate course in aviation ophthalmology and aviation medicine, February 5-7. A course in ophthalmology will be held, February 2-4. In the course covering aviation the guest lecturers will be:

Dr. David N. W. Grant, lieutenant colonel, M. C., U. S. Army.
Dr. Frederic H. Thorne, lieutenant colonel, M. C., U. S. Army.
Dr. John M. Hargreaves, major, M. C., U. S. Army.
Dr. Major S. White, major, M. C., U. S. Army.
Dr. John C. Adams, captain, M. C., U. S. Navy.
Dr. Eric Liljencrantz, commander, M. C., U. S. N. R.
Dr. Leon D. Carson, lieutenant commander, M. C., U. S. Navy, Washington, D. C.
Dr. Arnold D. Tuttle, medical director, United Air Lines, Chicago.
Dr. William Hodges McKnight, medical director of American Air Lines, Fort Worth, Texas.
Dr. William Randolph Lovelace II, division of surgery, Mayo Clinic, Rochester, Minn.
Ross A. McFarland, Ph.D., Boston, lieutenant commander, A.-V. (S.) U. S. N. R.

A postgraduate course in ophthalmology will be held, February 2-4. Participating will be Drs. Samuel Hanford McKee, Montreal, Que.; William L. Benedict, Rochester, Minn.; Edwin B. Dunphy, Boston; Harry S. Gradle, Chicago; Meyer Wiener, St. Louis; Algernon B. Reese, New York; Ernest A. W. Sheppard, Washington, D. C.; Avery DeH. Prangen, Rochester, Minn.; William Thornwall Davis, Washington, and Walter I. Lillie, Philadelphia. A course in ocular surgery, pathology and orthoptics is announced for January 26-31. On February 2 the speakers at a meeting of the Washington Ophthalmological

Society will be Dr. McKee, on "Routine Examination of the Fundus in Diabetes"; Dr. Reese, "Exophthalmos Associated with Thyroid Disease," and Dr. Wiener, "Reflections on Glaucoma Surgery After Forty Years' Experience."

Society News.—Dr. Herrman L. Blumgart, Boston, discussed "Varieties of Cardiac Pain, Their Clinical and Pathologic Significance," before the Washington Heart Association, November 26.—At a meeting of the Washington Ophthalmological Society, November 3, Dr. Thomas H. Johnson, New York, spoke on neuro-ophthalmology.—Dr. John M. Converse, New York, addressed a meeting of the medical and dental officers of the navy on duty in the District of Columbia and vicinity at the Naval Medical School, December 1, on "Wartime Surgery in England."—The Medical Society of the District of Columbia will devote its meeting, January 21, to a panel discussion on peripheral vascular diseases with Dr. Wallace M. Yater as the moderator. Others participating will include Drs. Norman E. Freeman, Philadelphia; Abram Wilbur Duryee, New York, and James Ross Veal, Washington.

ILLINOIS

Changes in Hospital Superintendents.—Dr. Joseph S. Drabanski has been appointed managing officer of the Chicago State Hospital, succeeding Dr. Edward F. Dombrowski. Dr. John B. Cipriani, Chicago, has been named managing officer of the Illinois Eye and Ear Infirmary, succeeding Dr. Stanley W. Parowski. Dr. James L. Smith, Chicago, became managing officer of the Jacksonville State Hospital on December 1.

Chicago

Course in Electrocardiographic Interpretation.—A course in electrocardiographic interpretation for graduate physicians will be given at Michael Reese Hospital by Dr. Louis N. Katz, director of cardiovascular research. The class will meet each week, starting Wednesday February 18, for twelve weeks, from 7 to 9 p. m. Additional information may be obtained from the Cardiovascular Department, Michael Reese Hospital.

Chicago Tumor Institute Buys Home.—The Chicago Tumor Institute, 21 West Elm Street, announces the purchase of the property where it has been situated since its establishment in 1938. Previously the clinic leased the property. More than 2,000 persons have been treated at the clinic since it opened; one third of the patients were treated free and one third at reduced rates.

Tons of Dust Fall Annually on Chicago.—The smoke abatement department has reported that a monthly average of 55.2 tons of dust per square mile fell last year in Chicago as compared with 54.1 tons in 1940. The downfall of dust at twenty-two stations throughout the city is the measuring stick used to determine the average. May was the dustiest month with 84.3 tons per square mile, compared with 59.6 in the same month in 1940. Increased industrial activity was said to be responsible for much of the 1941 gain. It was also stated that defense activity had forced many Chicago firms to use cheaper grades of coal, which make more smoke unless fired properly. The station located on the top of the building at 33 North La Salle Street, one of two stations down town, had the greatest dust fall, averaging 134.9 tons per square mile monthly. Among the outlying stations the one at 3532 Sheffield Avenue had the highest average with 81.7 tons of dust per square mile monthly. The cleanest outside station, according to the report, was at 1620 West Ninety-Ninth Street with a dust fall of 32.8 tons per square mile monthly.

INDIANA

Appointments to State Board of Health.—Drs. Herman M. Baker, Evansville, and Henry C. Metcalf, Connersville, were recently appointed to the state board of health to succeed Dr. John C. Glackman, Rockport, who resigned several months ago, and Dr. William Wise, Indianapolis. Drs. Ernest Rupel, Indianapolis, and Edmund M. Van Buskirk, Fort Wayne, were reappointed to the board. This is the first time in several months that the board has had a full membership, it is reported.

KANSAS

Health Service Director Goes to Milwaukee.—Dr. Richard F. Boyd, Topeka, who has been director of local health services of the Kansas State Board of Health, recently resigned to become regional medical officer for the Farm Security Administration in Michigan, Wisconsin and Minnesota. He will reside in Milwaukee.

Menninger Foundation Organized.—Announcement is made of the incorporation under the laws of Kansas of the Menninger Foundation, with headquarters in Topeka. The new foundation aims to provide psychiatric education, especially the training of young physicians in psychiatry, to encourage research in psychiatric and psychologic fields; to make available psychiatric treatment for patients in the low income bracket and to prevent mental illness, especially through development of child psychiatry and the application of psychiatric knowledge to education and child rearing. Officers of the foundation are Dr. Karl A. Menninger, president; Mr. John R. Stone, vice president; Dr. William C. Menninger, secretary, and Dr. Robert P. Knight, Topeka, treasurer, and trustees are:

Dr. Winfred Overholser, medical superintendent, St. Elizabeths Hospital, Washington, D. C.
Mrs. Albert Lasker, New York and Chicago.
Dr. John C. Whitehorn, Baltimore.
Mrs. Lucy Stearns McLaughlin, Santa Fe, N. M.
Dr. James Roscoe Miller, Chicago.
Mrs. Sidney C. Borg, New York.
George W. Hite Jr., New York.

Grants have been made for a ten year study of the place of occupational therapy in psychiatric treatment, for a seminar and special Bulletin on *Military Psychiatry and the distribution of this information to physicians on the medical advisory boards of the country*, and for research in the use of hypnosis in emergency psychotherapy and in substantiating newer psychiatric theories.

KENTUCKY

Changes in Health Officers.—Dr. Jesse M. Dishman, Princeton, health officer of Caldwell County, has been appointed health officer of Fulton County, succeeding Dr. Layson B. Swann, Paducah, who resigned to enter the army.—Dr. Frank L. Lapsley, Shelbyville, has been reelected health officer of Shelby County for a four year term.

Society News.—The Jefferson County Medical Society devoted its meeting in Louisville, December 15, to a symposium on fractures; the speakers were Drs. William Barnett Owen, William McDaniel Ewing, Harry Goldberg, Orville Ray Miller and Robertson O. Joplin, Louisville, and E. C. Hume, D.D.S.—At a meeting of the Louisville Medico-Chirurgical Society on December 12 Dr. Michael J. Henry discussed "Primary Carcinoma of the Liver" and Dr. Laman A. Gray presented a case report on "Extensive Pelvic Endometriosis." Both are of Louisville.

MICHIGAN

State Council of Health.—The governor recently appointed Drs. Harold E. Wisner, Detroit, a member of the state council of health to succeed Dr. Addison D. Aldrich, Houghton; Dr. Oscar D. Stryker, Fremont, was also appointed a member. Dr. Roy C. Perkins, Bay City, was reappointed to the council. Other members are Henry F. Vaughan, Dr. P.H., Ann Arbor, and John A. Galbo, D.D.S., Detroit.

MINNESOTA

Personal.—Dr. Frank J. Hirschboeck, Duluth, has been appointed by the governor a member of the state teachers' college board.—Dr. Cyril M. Smith, Duluth, has been appointed a member of the Minnesota Boxing Commission, his term to run until January 1943.—Dr. Reino H. Puumala, Cloquet, has been named coroner for Carlton County, succeeding the late Dr. Franklin W. S. Raiter, Cloquet, who had served in the position for twenty-five years.—John E. Anderson, Ph.D., director of the child welfare institute, University of Minnesota, Minneapolis, has been appointed chairman of the Minnesota committee of the White House Conference on Children in a Democracy. Dr. Roger L. J. Kennedy, Rochester, has been named a member.

Award First Certificate in Tuberculosis Control Program.—At a ceremony in the Tyler High School Auditorium, Tyler, Dr. Berton J. Branton, Willmar, president of the Minnesota State Medical Association, presented a certificate of accreditation signed by Governor Stassen to M. L. Anderson, Canby, chairman of the board of county commissioners, who accepted it for Lincoln County. The certificate was the first awarded in the cooperative program of the state association and the state department of health to accredit counties showing a tuberculosis mortality rate not to exceed 10 per hundred thousand of population and an incidence of tuberculous infection among seniors in high school not to exceed 15 per cent. The mortality rate must be based on a five year average and the student rate on tests of at least 80 per cent of the senior stu-

dents of the county. The program is believed to be the first adopted for tuberculosis control in a human population and is patterned after the federal plan to accredit areas showing eradication of tuberculosis in cattle.

MISSISSIPPI

Personal.—Dr. Bert R. Burgoyne, Lake Providence, La., has been appointed superintendent of the South Mississippi Charity Hospital, Laurel, succeeding Dr. John C. Butler, Laurel, who resigned to devote his full time to private practice.—Dr. Harold H. Rutledge, Richmond, Ky., has been chosen director of the Tate County Health Department.

Society News.—The Delta Medical Society was addressed at its thirty-eighth semiannual meeting at the Hotel Greenville recently in Greenville by Drs. Howard A. Nelson, Greenwood, on "The Patient—His Personality and His Disease"; Otis H. Beck, Greenville, "Urethral Strictures"; Toxey E. Hall, Belzoni, "Subdural Hematoma"; Lawrence L. Beall, Cleveland, "Treatment of Facial Injuries," and Bernard H. Booth, Drew, "Malaria." Dr. Grady W. Reagan, Little Rock, Ark., was the guest speaker, and his subject was "The Medical Treatment of Kidney Infection."

MISSOURI

Dr. Graham Chosen for Lister Lectures.—Dr. Everts A. Graham, Bixby professor of surgery, Washington University School of Medicine, St. Louis, has been awarded the Lister Medal for 1942, which is given in recognition of distinguished contributions to surgical science, according to *Science*. He will deliver the Lister Memorial Lectures during 1942 or later under the auspices of the Royal College of Surgeons of England.

Society News.—Dr. Albert C. Furstenberg, Ann Arbor, Mich., discussed "Medical Treatment of Ménière's Disease" before the St. Louis Medical Society on November 25. Dr. William Boyd, professor of pathology and bacteriology, University of Toronto Faculty of Medicine, Toronto, spoke before the society, December 2, on "Cause and Effect in Relation to Disease." Dr. James C. Sargent, Milwaukee, lectured before the society on December 16 under the auspices of the St. Louis Urological Society; his subject was "Common Injuries Involving the Urinary Tract."

NEBRASKA

Officers of State Medical Board.—The Nebraska State Board of Examiners in Medicine was reorganized at a meeting, December 10. The following officers were elected: Drs. William R. Boyer, Pawnee City, president; Ernest T. Manning, Omaha, vice president, and Henry J. Lehnhoff, Lincoln.

NEW YORK

New Professor of Anesthesia.—Dr. Paul W. Searles, associate in anesthesia, University of Buffalo School of Medicine, Buffalo, and chief anesthetist in the General Hospital, has been appointed professor of anesthesia and head of the department. He succeeds Dr. John H. Evans, who was elected professor emeritus. Dr. Searles graduated at the University of Minnesota Medical School, Minneapolis, in 1934.

Cancer Institute.—A regional cancer institute will be conducted in Syracuse on January 17 under the auspices of the state medical society, Tumor Clinic Association of the State of New York, Syracuse University College of Medicine and the division of cancer control of the state department of health. Dr. Herman G. Weiskotten, dean of the school of medicine, will open the program, which has been designated a "symposium for practitioners." The speakers will be:

Dr. Bowman C. Crowell, Chicago, Role of the Cancer Clinic in Cancer Control.
Dr. Lloyd F. Craver, New York, The General Practitioner and the Diagnosis of Cancer.
Dr. John J. Morton Jr., Rochester, Advance in Surgical Treatment of Cancer.
Dr. John Howard Ferguson, Syracuse, Biopsy—Indications and Methods.

The evening program will be opened by Dr. Edward S. Godfrey Jr., Albany, state health commissioner; Drs. Guilford Allen Robinson, New York, and Walter T. Murphy, Buffalo, will discuss "Principles of Radium and X-Ray Therapy," and Byrl R. Kirklin, Rochester, Minn., "X-Ray as a Diagnostic Aid in Cancer."

Study of Family Care.—Dr. Frank F. Tallman, clinical director of the Rockland State Hospital, Orangeburg, has been appointed director of the study of parole and family care by the temporary commission on state hospital problems. Central

Islip (N. Y.) State Hospital with an urban population and the Marcy State Hospital, Oneida County, with patients from rural areas were selected for the study, the object of which is to determine to what extent additional psychiatric social work results in increasing paroles and family care. One physician and three social workers have been assigned to Central Islip and one physician and two social workers to Marcy, releasing personnel which can give full time to the study. Dr. Tallman has been granted a leave of absence from the Rockland hospital to devote full time to the work.

New York City

Hospital News.—The City Hospital announced a special lecture to its chest clinic by Dr. Edward D. Churchill, John Homans professor of surgery, Harvard Medical School, Boston, November 12, on "Primary Carcinoma of the Lung."

The Harvey Lecture.—Dr. William C. Stadie, associate professor of research medicine, University of Pennsylvania School of Medicine, will deliver the fourth Harvey Society Lecture of the current series at the New York Academy of Medicine, January 15. His subject will be "Intermediary Metabolism in Diabetes Mellitus."

Dr. Hecht Awarded Medal.—The Frederic Ives Medal of the Optical Society of America was presented on October 24 to Selig Hecht, Ph.D., professor of biophysics at Columbia University, in recognition of "distinguished work in the field of optics." *Science* reports. Kasson S. Gibson, Ph.D., Washington, D. C., president of the society, presented the medal to Dr. Hecht during the twenty-sixth annual meeting of the society in New York. The medal was established in 1928 by Herbert E. Ives, Ph.D., Montclair, N. J., of the Bell Telephone Laboratories, in memory of his father.

Fellowships for Women Physicians.—The Women's Medical Association of the City of New York offers a Mary Putnam Jacobi Fellowship for medical research of \$1,000. Available Oct. 1, 1942, the fellowship is open to any woman doctor, either American or foreign, who is a graduate of a reputable medical school. Applications must be filed by March 1 and must be accompanied by statements by persons other than the candidate as to health, educational qualifications and previous work. The applicant should state the problem she proposes to investigate and send her photograph. The recipient of the fellowship will be expected to give full time to her study and make a report for publication on its completion. Application blanks may be obtained from the Mary Putnam Jacobi Fellowship Committee of the association, 321 East Fifteenth Street.

Personal.—Dr. Jacob B. Prager has been appointed medical director of the Israel-Zion Hospital, Brooklyn.—Dr. Jacob M. Gersberg, president of the International and Spanish Speaking Association of Physicians, Dentists and Pharmacists, recently returned from a trip to Mexico and various parts of the United States. He formed new chapters of the international association in Chandler and Phoenix, Ariz., San Diego, Calif., and El Paso and San Antonio, Texas.—The Medical Society of the County of Kings will receive \$1,000 and the medical library of the late Dr. Henry Joachim in accordance with a stipulation in his will.—Dr. Thomas A. McGoldrick, Brooklyn, has been appointed chief of the emergency medical service under the U. S. Civilian Defense.—Dr. Joseph Francis McCarthy, professor of urology at the New York Polyclinic Medical School and Hospital, was honored recently when a new wing at the Barros Luco Hospital, Santiago, Chile, was named for him.—The medical and nonmedical staff of Manhattan State Hospital, Wards Island, held a reception there December 8 for Dr. John R. Knapp, chief psychiatrist, who has retired after more than forty-five years' service; recently he has been temporarily serving as acting superintendent. Dr. Knapp was presented with a watch and traveling bag.

Medical Aid for Dependent Children.—Families qualified for aid to dependent children have been included under the medical and nursing service which previously has been available to families on home relief, to veterans and to the blind and aged, according to the *New York Times*. The extension of the service was one of the promised benefits of the merger last July of the board of child welfare with the welfare department of the city. About five thousand physicians representing the medical societies of the city will constitute the panel approved by the medical advisory committee of the welfare department, which is circulating physicians to learn how many wish to respond to aid to dependent children calls. On Novem-

ber 16 about three thousand six hundred had responded affirmatively. They will be paid \$2 a visit. There will be fifteen hundred approved pharmacists to whom patients may go for medicine. Bills for medicines will be paid by the welfare department. The number of families classified under aid to dependent children is 22,140; the number of children is 40,690, and the total eligible for the service is about 62,000, it was stated. In case of the aged, the blind and dependent children, the welfare department will be unable to pay attending physicians directly as it does in the case of home relief families. The Social Security Act forbids specific payments and requires that checks be sent to the clients, who cannot be compelled to turn over the cash to the physician. As a result the beneficiaries often do not pay the physician, who in turn has no claim against the welfare department. William Hodson, welfare commissioner, said the Social Security Board was trying to have the law amended.

NORTH CAROLINA

Lectures on Medical History.—Dr. William G. Harrison, Birmingham, Ala., gave a series of public lectures on the history of medicine at the Bowman Gray School of Medicine, Winston-Salem, November 24-28. His topics were "Animal Medicine," "Folklore in Medicine," "The Dawn of Medicine in the East," "Early Greek Medicine" and "Classical Greek Medicine."

Personal.—Dr. Thomas O. Coppedge, Nashville, is now health officer of Nash County.—Dr. Leo B. Skeen, Sanatorium, has been named health officer of Iredell County.—Dr. Vernon W. Taylor Jr., Madison, has been appointed assistant medical director of the city hospital system of Winston-Salem, a position recently created because of an expanded program of public service.

Hospital for Ashe County.—The new twenty-four bed Ashe County Memorial Hospital, Jefferson, was dedicated and formally opened, November 2. The two story stone structure is a WPA project and cost \$60,000. Speakers at the dedication included Hon. Frank Dryden, Washington, D. C., acting WPA commissioner; Congressman Robert L. Doughton, Laurel Springs, and Dr. Watson S. Rankin, Charlotte.

NORTH DAKOTA

Sanatorium Superintendent Goes to Seattle.—Dr. Cedric Northrop, superintendent of the state tuberculosis sanatorium at San Haven, has resigned, effective December 1. He plans to accept a position as director of tuberculosis control in the Washington State Department of Health, Seattle, according to the *Journal-Lancet*.

OHIO

Employees Eligible for Retirement to be Examined.—Three physicians were named to a new board to examine city employees of Toledo who have reached the retirement age of 70 but who want their services retained, newspapers reported on December 2. The city council authorized the appointment of the board members on the recommendation of the Academy of Medicine of Toledo and Lucas County. The physicians are Drs. William Frank Maxwell, Claude E. Price and William G. Gardiner. The state legislature ruled some time ago that all employees 70 or older must retire this year. It recently advanced the deadline to the end of 1945 if employees 70 or past can qualify physically to continue working.

Cleveland Health Museum Observes Anniversary.—The Cleveland Museum of Health and Hygiene marked its first anniversary, November 14, at a luncheon held in cooperation with the chamber of commerce. Dr. Victor G. Heiser, New York, spoke on "Toughen Up, America." During the year, thirty-seven thousand persons from forty-four states visited the museum and two hundred and eighty-nine guided tours were conducted through the museum by its staff and volunteer guides from the woman's auxiliary of the Academy of Medicine of Cleveland. The museum has eight hundred and eight members and contributors and is maintained by them and by private subscriptions. Beginning this month the museum will offer three to six month internships in health education; selected applicants will learn how to design, build and install exhibits that effectively teach functions of the body. Dr. Bruno Gebhard, former curator of the Dresden Hygiene Museum, is director of the museum, which was developed as a clearing house for popular health information under the direction of the Academy of Medicine of Cleveland.

OKLAHOMA

Society News.—The Pottawatomie County Medical Society was addressed recently by Dr. William M. Gallaher on "Furuncle of the Nose" and Dr. James M. Byrum, "Some Observations in Obstetrical Surgery." Both are of Shawnee.

Benevolent Fund Committee Named.—The Oklahoma State Medical Association has appointed a special committee to report on the handling of the association's surplus fund for benevolent and other purposes. Members are Drs. Galvin L. Johnson, chairman, Pauls Valley; Robert U. Patterson, dean, University of Oklahoma School of Medicine, Oklahoma City, and George R. Osborn, Tulsa.

Committee to Consider Control of Certain Drugs.—The state medical association has appointed a committee to confer with a committee of the Oklahoma Pharmaceutical Association about regulating the sale of certain drugs which may be a menace to health when used by the public without proper prescriptions. Members of the medical association's committee are Drs. Grady F. Mathews, Oklahoma City, chairman; William Turner Bynum, Chickasha, and Leo J. Starry, Oklahoma City.

Dermatologists Entertain Texas Group.—The Texas Dermatological Association was the guest recently of the Oklahoma Dermatological Association at a meeting at the University Hospital, Oklahoma City. Twenty-two cases for diagnosis and study were presented by Drs. Onis G. Hazel and John H. Lamb, both of Oklahoma City. The group was entertained at a barbecue supper at the country cabin of Dr. Everett S. Lain, Oklahoma City. The Texas association plans to reciprocate at its fall meeting in 1942.

OREGON

Mosquito Eradication Program.—The Works Progress Administration has allocated \$131,200 to the state board of health to eradicate mosquitoes in areas adjacent to defense industries and military and naval establishments.

Course in Pediatrics.—The University of Oregon Medical School, Portland, conducted a postgraduate course in pediatrics, December 29-31, for physicians of Oregon and Washington, under the direction of the school's department of pediatrics in cooperation with the divisions of maternal and child health of Oregon and Washington state boards of health. Speakers included Drs. Joseph B. Bilderback, Morris L. Bridgeman, James W. Rosenfeld, Paul V. Woolley Jr., Scott H. Goodnight, Adolph Weinzierl, John A. Gius and Charles E. Gurney.

PENNSYLVANIA

Society News.—The Mercer County Medical Society was addressed in Sharon recently by Dr. John B. Price, Norristown, and John H. Brownback, A.B., professor of biology at Ursinus College, Collegeville, on "Relationship of the Autonomic Nervous System to Upper Respiratory Symptoms" and "Embryology of the Autonomic Nervous System" respectively. —Dr. Joseph H. Barach, Pittsburgh, addressed the Westmoreland County Medical Society, December 2, on "Diabetes and Its Complications."

Philadelphia

Personal.—Dr. Hubley R. Owen resigned as chairman of the council of defense to give full time to his work as director of public health, effective January 1. Dr. Owen had been serving as defense chairman since last May.

New Chair in Hematology.—The Thomas Drake Martinez Cardeza chair of clinical medicine and hematology has been established at Jefferson Medical College with Dr. Harold Walter Jones, associate professor of medicine at the school, as the first incumbent. The funds were provided by Thomas Drake Martinez Cardeza to carry on the work of the Charlotte Drake Cardeza Foundation for the study and investigation of diseases of the blood and allied conditions. Mr. and Mrs. Cardeza established the foundation in 1938 and have since maintained it in memory of the former's mother. Dr. Jones will continue teaching in the medical college and direct all activities of the foundation. He graduated at Jefferson in 1917.

RHODE ISLAND

Society News.—Dr. James P. Deery, Providence, discussed "Tuberculosis Case Finding at the Army Induction Station" before the Providence Medical Association, December 1, and Dr. Channing C. Simmons, Boston, "Diagnosis of Bone Tumors."

Advisory Council of Health.—Governor McGrath recently appointed Dr. Charles F. Gormly, a vice president of the state medical society, and Mr. John E. Farrell, executive secretary of the Providence Medical Association, as members of the advisory council to the state department of health. Other members of the council are Miss Winifred L. Fitzpatrick, R.N.; Mr. Kenneth D. MacColl, and Dr. Dennett L. Richardson, medical superintendent of the Rhode Island Hospital. All are of Providence.

SOUTH CAROLINA

Clinic Named in Honor of Mill Physician.—The Wood Memorial Clinic was opened in November at the Slater Mill in upper Greenville County. The clinic has been dedicated to the service of the eight hundred families of the textile community and named in honor of the late Dr. Landrum W. Wood, Slater, who for years served there. The unit has an operating room for minor surgical work, dental surgery room, diet kitchen and laboratory. Two beds for convalescence and diagnosis will be added later as the need may arise, newspapers reported.

TEXAS

Personal.—Dr. Jack R. Ewalt, assistant professor of psychiatry at the University of Colorado School of Medicine, Denver, has been named associate professor of neuropsychiatry at the University of Texas School of Medicine, Galveston. —Dr. Horace A. Baker, Wills Point, has been appointed health officer of Van Zandt County.

Society News.—Dr. Charles H. Warren, among others, addressed the Dallas County Medical Society in Dallas, October 23, on "Sulfanilamide as Prophylaxis in Contaminated Traumatic Wound Cases." —The Texas Pediatric Society held its annual meeting recently in Dallas; officers are Drs. Percy E. Luecke, Dallas, president; Frank H. Lancaster, Houston, president-elect, and John E. Ashby, Dallas, secretary-treasurer. The society will meet in San Antonio in October 1942.

WISCONSIN

District Meeting.—At a meeting of the Ninth Council District Medical Society in Wausau, November 13, Drs. Alexander E. Brown, Rochester, spoke on "The Present Day Status of the Sulfonamide Compounds" and Ernest M. Hammes, St. Paul, "Diagnosis and Treatment of Injuries and Diseases of the Spinal Cord."

Dr. Seeger Goes to Texas.—Dr. Stanley J. Seeger, chief of staff of the Milwaukee Children's Hospital and chief of staff of Columbia Hospital, has taken up his residence in Texarkana, Texas. Dr. Seeger has been chairman of the Council on Industrial Health of the American Medical Association since its organization in 1937; he was president of the Medical Society of Milwaukee County in 1926 and of the state medical society in 1933-1934. Texarkana is Mrs. Seeger's former home.

Personal.—Dr. George M. Shinnors, Green Bay, has been appointed health commissioner of Green Bay. —Dr. Charles D. Boyd, Kaukauna, was guest of honor at a banquet recently, marking his completion of fifty years' practice in the community. —Dr. Elmer L. Sevringhaus, Madison, has been elected an honorary foreign member of the National Academy of Medicine of Buenos Aires. Dr. Sevringhaus toured South America early this year under a government travel grant. —Dr. Willard M. Sonnenburg, Sheboygan, was recently elected president of the Sheboygan County Conservation Alliance.

GENERAL

Another Fraudulent Solicitor.—The National Publishers Association, New York, announces that a fraudulent magazine solicitor using the names J. R. Hamilton, J. S. Stewart and C. O. Reed has been calling on physicians exclusively, offering subscriptions to *Newsweek* featuring a "special publicity offer —40 issues *Newsweek*." This man issues a green store receipt bearing the offer in a rubber-stamp imprint and also rubber-stamps "Newsweek, 152 West 42nd St., New York City." He pockets full amount of his collections, making no report of the orders. Physicians approached by this solicitor are urged to notify the police and ask them to wire the National Publishers Association, 232 Madison Avenue, New York, collect. The fraudulent representative's description is: age 40 years, height 5 feet 10 inches, weight about 175 pounds; he has brown eyes and black hair.

National Academy of Sciences Closes Building to Public.—Because of the large amount of work being done by the National Academy of Sciences and National Research Council committees in an advisory capacity to the government during the present emergency, and because exhibit and other rooms formerly open to the public are now occupied as offices, the Council of the National Academy of Sciences has directed the National Academy of Sciences Building be closed to the public until further notice. The academy regrets that this step is necessary but will, as soon as circumstances permit, reinstall exhibits of scientific interest to the public. The annual meeting of the academy will be held in the academy building, April 27-29, but attendance, formerly open to the public, will be limited to academy members, their invited guests, the press and to nonmembers who present papers before the academy. Only members of the academy and of the press will receive abstracts of papers.

Extensive Survey of Eye Injuries in Industry.—A report has just been issued of a study of eye injuries in industry which was sponsored by the National Society for the Prevention of Blindness. The report, prepared by the late Louis Resnick, industrial relations director of the society, is based on two decades of personal observations in workshops throughout the country and contains a complete summary of eye hazards existing in American industry today. According to the study, about three hundred thousand eye injuries occur in factories, mills, mines and workshops each year. Of the thousand eye injuries expected to occur each day, all but twenty could be prevented, it was said. There are in the United States more than eighty thousand persons who have lost the sight of one eye as a result of industrial hazards and close to eight thousand who have lost the sight of both eyes; the number of persons who have lost permanently part of the vision of one or both eyes undoubtedly runs into hundreds of thousands. These are conservative estimates and since many factors are involved in accurate reporting, the survey points out that the injuries considered represent only a part of the total number which actually occur. Eye injuries lead to the loss of more than fifty-three million man hours of work yearly, the report states. Discussing the compensation for such injuries, the report shows that in liberal states the maximum compensation paid for total loss of vision is two thirds of the wage received by the injured workman at the time of the accident, whereas in some states, as in Oregon, the maximum compensation for total loss of vision is as low as \$30 a month for life. Great financial loss to the workman and the employer could be averted by the cooperation of the two groups in the utilization of demonstrated methods of preventing accidents and diseases.

HAWAII

Dr. Wayson Completes Fifty Years in Medicine.—Dr. James T. Wayson, who from 1918 to 1931 was general health officer of the Territory of Hawaii, Honolulu, recently completed fifty years in the practice of medicine. A few years after his graduation at the University of California Medical School, San Francisco, Dr. Wayson went to Hawaii, where he was at one time physician in charge of the Kalihi Boys' Home and superintendent of the Kapiolani Girls' Home, Honolulu. He was city and county physician of Honolulu from 1911 to 1918. Since 1932 he has been physician to the Board of Leper Hospitals. He has served as a member of the territorial board of health and of the board of medical examiners for several terms. Dr. Wayson, a native of Port Townsend, Wash., is 71 years of age.

CORRECTIONS

Transfusion of Blood and Blood Substitutes.—In an editorial under this title in *THE JOURNAL*, Nov. 8, 1941, page 1627, in the last paragraph seven lines from the end is the statement "One thousand cc. of plasma gives 8 cc. of dried product." This should have read "One hundred cc. of plasma gives 8 cc. of dried product."

Sodium Lactate in Distilled Water.—In the clinical note by Quick and Lord entitled "Acute Hemolytic Anemia Following Sulfathiazole Administration" in *THE JOURNAL*, Nov. 15, 1941, page 1704, the authors state that they used "infusions of sodium lactate—Ringer's solution." This was an error and should have been "infusion of sodium lactate in distilled water."

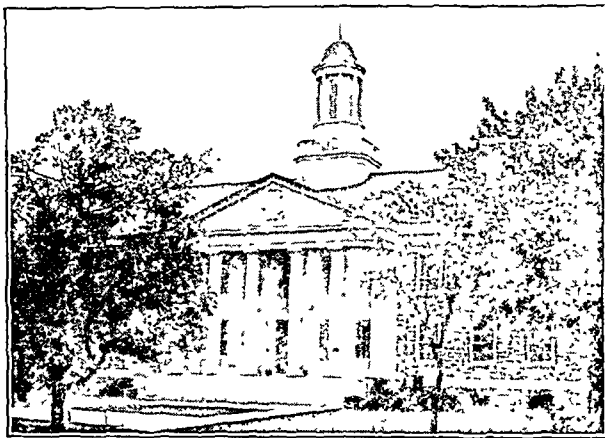
Government Services

Committee for Vocational Rehabilitation

A special committee representing federal agencies concerned with the vocational rehabilitation of war veterans and civilians was appointed on Dec. 22, 1941, by Paul V. McNutt, federal security administrator, according to the *New York Times*. It is planned to draft a program of rehabilitation to meet the current and postwar suffering. The committee membership includes Watson Miller, assistant federal security administrator, chairman, and representatives of the Office of Production Management, the Social Security Board, the Veterans Administration, the Public Health Service, the Employees Compensation Commission, the Department of Labor and the Office of Education. The *Times* reported that both organized labor and industrial management are to be approached for advice and cooperation.

Hoff Hall at Army Field Service School

Hoff Hall, the new academic building of the Medical Field Service School at Carlisle Barracks, Pa., was formally accepted by the acting commandant of the school on November 12. It is a two and one-half story stone structure costing \$350,000. The building contains an auditorium with seating capacity for four hundred persons and facilities for sound pictures and for instructional aid. There are two classrooms each with a capacity for four hundred persons and an air conditioned library. In addition there are smaller classrooms, offices, and a museum.



Hoff Hall.

Hoff Hall is built of native limestone quarried partly on the military reservation and is faced with Vermont granite. It is named for the late Col. John Van Rensselaer Hoff, a distinguished officer of the medical corps and leader in the movement by which the medical department became a staff corps. He graduated at Albany (N. Y.) Medical College in 1871 and at the College of Physicians and Surgeons in the City of New York in 1874. In the same year he was appointed first lieutenant and assistant surgeon, U. S. Army. He organized the first detachment of the hospital corps in the army at Fort Reno, Indian Territory, and the first company of instruction hospital corps at Fort Riley, Kan., in 1891. He was recommended for a medal of honor in the Sioux campaign in 1890 and 1891. He served through the war with Spain as chief surgeon in Puerto Rico, was chief surgeon of the China relief expedition in 1900 and was a member of the faculty of the Army Medical School in 1901 and 1902. In 1905 he was commissioned assistant surgeon general and in that year was detailed observer with the Russian army in the Russo-Japanese War; from 1910 until retirement for age in 1912 he was chief surgeon of the Department of the East. Colonel Hoff was a pioneer in the training of enlisted men of the medical department. He insisted that the medical soldier is as much a soldier as any other and must receive adequate drill, and training. His ideas have prevailed. At the recent exercises Col. Edgar E. Hume, acting commandant, received the key to the building from the constructing quartermaster, Lieut. Col. Jacob Osterman.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 22, 1941.

Food in Case of Invasion and Heavy Bombing

The minister of food has announced plans to secure an orderly distribution of food in the event of invasion. In threatened districts food shops would be closed—probably for a few hours—to permit rapid stock taking so that the voluntary food officers would know precisely what food was available and be in a position, with the help of military advice, to decide what amounts would be distributed to each person. Reserves of food in bulk belonging to the ministry vary from district to district, according to military advice. Householders are told that the quantity of food stored for an emergency should be one week's or at most two weeks' supply. Plans for emergency feeding on a wide scale in London have been made by the county council in case heavy bombing of the capital is resumed. Catering establishments of all kinds—hotels and workmen's dining rooms, clubs, teashops, taverns and milk bars—have all been brought in and, where practicable, industrial canteens also will assist. These plans will be put into force only when the authorities consider the emergency to be really grave and only in those parts of the capital where damage to buildings, gas, electricity, water and transport services make emergency feeding essential. Given such conditions, three hundred voluntary officials stand ready to organize a meals service for any emergency. Standard menus will be arranged. Tea will be available at 2 cents a cup, milk at 4 cents a glass, soup (pea or vegetable) at 4 cents a mug, rice pudding for children under 5 at 5 cents a plate, milk soup with bread for children under 5 at 12 cents a mug, meat and vegetable stew with bread 12 cents a plate, meat and vegetables at 18 cents. People will be asked to take with them to these feeding centers their own dishes and cutlery and will be told that basins and mugs are better than plates and cups. If a district is badly bombed but the conditions do not warrant the operation of emergency plans, local caterers will be able to call for supplies of hot stew in bulk from establishments equipped for big scale production.

Destruction at Museum of Royal College of Surgeons

Largely irreparable damage was done by German bombs to the greatest pathologic and anatomic museum in the world. Sir St. Clair Thomson has made a report on the specimens illustrating the surgery of the ear, nose and throat. For many years the museum assembled these specimens and received from eminent specialists invaluable collections representing their life work. One of the earliest gifts of normal anatomy was received from the aurist Toynbee, who presented his 300 specimens of the anatomy of the temporal bone. This addition was greatly enriched when Arthur Cheate presented his unrivaled series of sections of the temporal bone. Both these collections have been severely damaged. The basis of the rhinologic section of the museum was secured when the British obtained the large collection made by Onodi of Budapest illustrating the anatomy of the nose and accessory sinuses. It has been heavily damaged, but about 95 specimens are intact and the others can be replaced, as they represent normal anatomy. The 14 specimens of the anatomy of the paranasal sinuses recently presented by the late Professor Hajek are intact. He was able to escape from Vienna about two years ago and with the generous help of American and British colleagues reached London. Here through the help of his confrères he spent his last two years, during which time he enjoyed the liberty which he so much appreciated.

When he escaped from Vienna, he and his wife had their gold watches taken from them and he was allowed to bring only money equivalent to \$2.50. Yet he managed to bring 14 specimens of his collection of rare irregularities of the anatomy of the nasal sinuses. The rest of his 150 specimens had to be left in Austria. The 14 formed part of the specimens he had shown during fifty years to his classes. As a token of his gratitude for deliverance from the city in which he had long been a famous teacher he presented the specimens. The valuable addition to the museum by V. E. Negus of the specimens forming the foundation of his classic study on the comparative anatomy and physiology of the larynx has escaped damage.

International Standard for Vitamin E

An international standard for vitamin E has been established. As for vitamins A, B, C and D the National Institute of Medical Research, London, acting on behalf of the Health organization of the League of Nations, has undertaken its supply to laboratories and research workers throughout the world. Synthetic racemic alpha tocopherol acetate has been adopted as the international standard for the vitamin. Investigation of its chemical, physical and biologic properties, its suitability as an international standard and its application in biologic assay was performed at the request of the Health Organization of the League of Nations by the vitamin E subcommittee of the accessory food factors committee of the Lister Institute and the Medical Research Council. The subcommittee obtained the cooperation of experts in fourteen laboratories in Europe and America. It recommends that the international unit for vitamin E should be defined as the specific activity of 1 mg. of the standard preparation. This is the average amount, administered by mouth, which prevents resorption gestation in rats deprived of vitamin E.

In normal times the results of the cooperative investigation would have been submitted for discussion at the third international conference on vitamin standardization, which had been arranged for the autumn of 1939, but because of the war it was not held. However, the recommendations have been placed before the members available of the League of Nations Permanent Committee on Biological Standardization and the International Conference on Vitamin Standardization. These have taken the responsibility of adopting the proposed standard, definition of the international unit and the authorizing of the National Institute of Medical Research to proceed with the distribution of the standard. This is issued as a solution in olive oil of the strength of 0.1 Gm. containing 1 international unit. In countries with national control centers it will be supplied to their directors for distribution. It will also be supplied to laboratories and research workers in Britain and in countries where national control centers have not yet been set up. Applications should be made to the Department of Biological Standards, National Institute for Medical Research, Hampstead, London, N.W. 3.

Control of the Sale of Nostrums

The Pharmacy and Medicines Act of 1941 stringently controls the sale of secret remedies. The Ministry of Health has now issued a circular to the food and drug authorities drawing their attention to the power conferred on them to prohibit the advertisements calculated to lead to the use of articles for the treatment of Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxia, paralysis or tuberculosis. Similar power is conferred in relation to articles for procuring miscarriage. The act further makes compulsory the disclosure by appropriate means of the composition of medicines sold by retail other than when prescribed, made up and supplied for a particular person. Because of the war, the enforcement of the last provision is postponed until July 1942.

RIO DE JANEIRO

(From Our Regular Correspondent)

Dec. 22, 1941.

Typhus Fever in Brazil

Since 1929 Lemos Monteiro of the Butantan Institute has ascertained by laboratory procedures the existence of several cases of a typhus-like rickettsiosis in the state of São Paulo. In 1932 he demonstrated with the collaboration of Parker and Davis and of Dyer of the United States by cross immunization that São Paulo typhus and Rocky Mountain spotted fever are identical. In 1934 J. A. Moreira and Octavio Magalhaes reported a few cases of typhus in the state of Minas Gerais, and in 1939 J. Travassos and E. Dias of the Oswaldo Cruz Institute proved experimentally that Minas Gerais typhus and Rocky Mountain spotted fever are identical too. Now Drs. J. Tostes and G. Bretz have reported for the first time, in a rural section of the state of Rio de Janeiro, a small outbreak of a disease that, from the clinical, epidemiologic and experimental standpoints is very similar to the Rocky Mountain spotted fever that is known to occur in the states of São Paulo and Minas Gerais. The rickettsial nature of the disease was well established through the peritoneal inoculation in guinea pigs of blood from the patients suffering from the infection. In the opinion of the authors the picture presented by the animals shows a close relationship between the Rio de Janeiro virus and that of Rocky Mountain spotted fever. The incubation time varies from two to six days. The animals show high fever (40-41 C., or 104-105.8 F.) and about 85 per cent die around the end of the first week. A high percentage of male guinea pigs develop scrotal reaction followed frequently by necrosis of the scrotum. The blood is infective during the period of high fever, reproducing the disease when inoculated in other animals. The brain shows a high virus concentration and, stored at a low temperature (-4 C.) is used for reinoculations. The most important finding at autopsy is the enlarged and darkened spleen. It is also frequent to find enlarged lymph nodes and swelling of the subcutaneous connective tissue. The rickettsias are usually found in the endothelial cells of the peritoneal sheet. The Weil-Felix reaction with Proteus O_x19 was positive in 5 out of 6 patients examined. The authors have made extensive researches to discover the vector of the disease. The experiment with ticks of the infected area have given till now negative results. The identification of the virus is still incomplete, but the authors are inclined to think that the virus is of the São Paulo and the Minas Gerais strains, and so of western Rocky Mountain spotted fever as well.

The Yellow Fever Situation

In all Brazil as in the whole Western Hemisphere there have been no reports of cases of yellow fever of the urban type during 1941 and in the previous three years as well. Credit must go to those who have perfected control methods so successfully begun in this hemisphere by Gorgas and Oswaldo Cruz. Attention now centers on jungle yellow fever, which is the same disease as urban yellow fever, but with this distinguishing epidemiologic characteristic that in its special forest environment it is not transmitted by *Aedes aegypti*. Risk of yellow fever epidemics will remain as long as the jungle type of the disease persists. During the year 1941 antiaegypti measures have been intensified throughout large areas and many additional districts are now apparently free from this mosquito. There have been advances in the detection of yellow fever, and this point is very important as the failure to suspect the disease has caused the loss of valuable time in the past. It is no longer sufficient to accept the opinion of the clinician, even experienced. Happily the laboratory is now able to give con-

clusive information, even in clinically mild or quite atypical cases, through viscerotomy and protection tests. During the past epidemic season 149 viscerotomy proved cases occurred in rural sections of the states of Rio de Janeiro (4) and Espirito Santo (145). Vaccination was continued on a large scale, the total since the beginning of the use of the procedure almost reaching 2 million vaccinations. Some time during the year 1940 it became apparent that the vaccine being used was not adequately protecting the inoculated persons against the infection, and the fact has been confirmed by postvaccination protection tests. The vaccination effort was reduced while studies were being made to determine the causes of the failure. Fortunately the difficulties in the preparation of a suitable vaccine have been overcome and results comparable to those reported previously were once more obtained. According to the new distribution of tasks, since the reorganization of the federal department of health reported in a previous letter (*THE JOURNAL*, July 12, 1941, p. 132) the yellow fever service of the department has assumed full responsibility for the antiaegypti work, for the viscerotomy and for field vaccination, while the International Health Board of the Rockefeller Foundation continues to cooperate in the epidemiologic and laboratory studies of the disease and in the preparation of vaccine.

Progress in the Pharmaceutical Industry

The chemical-pharmaceutical industry has been in full development in Brazil, since the beginning of World War II. In 1940 the drug and pharmaceutical products took second place, by value, among the exported manufactured goods. At the head of the list are the medicinal oils and emulsions, as well as aqueous and alcoholic extracts of medicinal plants, the last ones forming an important field, as the flora of Brazil is very diversified and rich. The increase over the year 1939 represents more than 400 per cent. Mexico, Peru and Colombia, in this order, are the countries that imported most from Brazil in the field of drugs and medicinal preparations. A very recent development in this field is the report, from the chemical laboratory of the Department of Agriculture, that the liver of "cação"—*Mustelus vulgaris*—a large sharklike fish commonly found off the coast of northern Brazil, is rich in vitamin A. The analysis demonstrated an average potency of about 20,000 international units per gram.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 15, 1941.

Loan for Health Department in Chile

The government of Chile has received the approval of the parliament for a loan of 500 million Chilean pesos (\$20,000,000) for public health work, more especially for the construction of hospitals, works of sanitation, mother and child protection, a campaign against venereal diseases and tuberculosis and finally the industrialization of lands. Chile has perhaps the highest mortality rate in the world. The morbidity is likewise shockingly high, particularly as regards tuberculosis, syphilis and infectious diseases. These influences incapacitate 20 per cent of the population for working. Chile has a shortage of twenty thousand hospital beds. The obstetric facilities cannot accommodate even 60 per cent of the parturient women. Patients with mental diseases are inadequately provided for. Hospitals of from twenty-five to two hundred and forty beds are urgently required in twenty-eight cities, and insane asylums need equipment. This will require 300 million Chilean pesos (\$12,000,000).

The infant mortality is enormous, as is the number of illegitimate children, forty thousand of whom are without parents. Only 30 per cent of the population live in hygienically unobjectionable towns and 56 per cent in localities which have no hygienic facilities whatever. Of the vegetables marketed in

Santiago de Chile, 80 per cent have been fertilized with sewage. To remedy this situation, sewerage systems must be installed in one hundred and seventy localities and drinking water must be provided for seventy-four. The expenses involved in this are estimated at 90 million Chilean pesos (\$3,600,000). The country has 400,000 syphilitic patients. Facilities for hospitalization, treatment, isolation and education of these patients are urgently needed. The expenses involved are estimated at 90 million Chilean pesos. Chile has about 200,000 tuberculous patients with a mortality of 400 per hundred thousand of the population. There is a shortage of six thousand beds for tuberculous patients. An efficient campaign against tuberculosis will require 100 million Chilean pesos (\$4,000,000).

Menarche in Buenos Aires

Dr. Halperin Pines recently sought to determine the question of the age at which girls in Buenos Aires first menstruate by examining 10,710 Argentine, Spanish and Italian girls in the population. The results are given in the following tabulation:

Age at Initial Menstruation	No. of Cases	Per Cent
9.....	28	0.2
10.....	156	1.45
11.....	955	8.9
12.....	2,011	18.7
13.....	3,142	29.5
14.....	2,456	22.9
15.....	1,192	11.7
16.....	456	4.2
17.....	204	1.9
18.....	90	0.8
19.....	20	0.1

In 1 case menstruation set in at 7 years, in 3 cases at 8 years and in 3 at 20 years. In the majority of cases, accordingly, menstruation began with the thirteenth year. In a similar study, made by Ries and Bueno of 2,947 Argentine children in 1935, age 14 was found to be the initial age of menstruation in most of them. A further analysis was made of 886 Argentine children, most of them belonging to the best social levels. This study gave the following statistical picture:

Age at Menstruation	No. of Cases	Per Cent
8.....	1	0.11
9.....	5	0.56
10.....	33	3.7
11.....	170	19.1
12.....	205	23.2
13.....	253	28.4
14.....	121	13.6
15.....	34	3.8
16.....	10	1.1
17.....	8	0.9
18.....	...	...
19.....	1	0.1

These figures indicate that menstruation sets in at an earlier age in girls in the economically higher brackets.

The Spanish children belonging to the poorer classes begin to menstruate most frequently when 14 and 15 years old, at an age later than that of Argentine and Italian girls in the population. Among these, menstruation sets in in Italian girls mostly at the thirteenth and fourteenth year age level.

News

The Rockefeller Foundation has granted to the physiologic institute of the university of Córdoba \$1,500 for the purchase of apparatus and animals for studies on the physiology of the sex life of South American monkeys.

Chile has established the Servicio Nacional de Salubridad Pública, which is to control all sanitary organizations that are concerned with prophylaxis and health protection. The new

organization will take over a great part of the activity which hitherto was handled by the cities, particularly in the control of foodstuffs, in the health inspection of housing facilities, industries and so on.

A Buenos Aires firm (Iturrat) has donated 20,000 pesos (\$6,000) for the department of tuberculosis in the university of Buenos Aires to be used to support social work.

At the suggestion of the director of the Instituto Osvaldo Cruz in Rio de Janeiro, Dr. César Pinto, it has been planned to found a Sociedad Internacional contra la Hidatosis. A meeting of Argentine, Brazilian and Uruguayan physicians will be held in Uruguay to promote this matter.

The council of the University of Buenos Aires, in agreement with the faculty of medicine, has decided to celebrate the "Dia del Medico" every year on October 18.

The faculty of medicine of the University of Buenos Aires has decided to create a bureau which is to cultivate relations with American universities. This organization is connected with the dean's office and is to maintain close scientific, administrative and scholastic relationships with all faculties of medicine of the three Americas.

Prof. Juan Ramón Beltrán, professor of medical history in Buenos Aires, at the invitation of the faculty of medicine of Rio de Janeiro, is giving a series of lectures in Rio de Janeiro on medicine in ancient Greece.

Dr. Alvaro E. Bence received from the Asociación Argentina para el Progreso de las Ciencias a stipend for the study of bronchoscopy with Chevalier L. Jackson and Louis Clerf in Philadelphia.

Dr. Pedro Belou, professor of anatomy in the faculty of medicine of Buenos Aires, will lecture during the coming months in the leading cities of the South and Central American countries in behalf of Pan American medical solidarity. He has also been invited by several universities in the United States. While in this country he is planning to have English adaptations made of scientific films on neuraxis and the arterial system.

Deaths

Dr. Benigno T. Escobar, professor of clinical surgery at the faculty of medicine of the University of Asunción, Paraguay, aged 63, died in Buenos Aires, where he was conducting studies.

Prof. Dr. Alejandro Centeno, internist at the faculty of medicine of the University of Córdoba, Argentina, died recently.

Marriages

ROBERT VAN ZANDT BUCKLIN, Evanston, Ill., to Miss Rosemary Leonore Heiny in Tacoma, Wash., in October 1941.

JAMES LUTHER SPENCER JR. to Miss Frances Elizabeth League, both of Charleston, S. C., Sept. 27, 1941.

CARL T. BUEHLER JR., Halstead, Kan., to Miss Maxine James of Burlington Junction, Mo., in September 1941.

WILLIAM HUBBARD GRIMES JR., Colquitt, Ga., to Miss Claire Rosalinde Richards of Atlanta, Sept. 20, 1941.

DAVID SHIELDS CARROLL, Morristown, Tenn., to Miss Mary Kathryn McGuire of Memphis, Nov. 8, 1941.

NORMAN W. HENRY JR., Mooresville, N. C., to Miss Ethel R. Black of Vineland, N. J., Aug. 28, 1941.

KARL E. JOHNSON, San Diego, to Miss Catharine M. Harris of Santa Barbara, Calif., Sept. 20, 1941.

McLEMORE BIRDSONG, Charlottesville, Va., to Miss Charlotte Spain of Petersburg in October 1941.

ARNOLD F. STRAUSS to Miss Marjory Ware Spindle, both of Norfolk, Va., in October 1941.

HERBERT HOLDEN THOMAS, Huntsville, Ala., to Miss Louise Petry of Eufaula, Sept. 1, 1941.

JAMES F. LYONS, Miami, Fla., to Miss Patricia Scmple of Coral Gables in August 1941.

Deaths

Walter Lindsay Niles * New York; Cornell University Medical College, New York, 1902; since 1916 professor of clinical medicine and from 1919 to 1928 dean, and since October 1941 acting dean, at his alma mater; member of the Association of American Physicians and the American Clinical and Climatological Association; vice president of the New York Academy of Medicine from 1934 to 1936, on the board of trustees from 1928 to 1932 and again since 1936 and chairman since 1937; member of the Joint Administrative Board of New York Hospital, Cornell Medical College Association; attending physician, New York Hospital; consulting physician, Southampton (N. Y.) Hospital, Jamaica (N. Y.) Hospital, Nassau Hospital, Mineola; Bellevue Hospital, New York Infirmary for Women and Children, and Memorial Hospital; author of the chapter on intestinal diseases in Cecil's Medicine; aged 63; died, Dec. 22, 1941, of cerebral hemorrhage.

Adam Gillespie Nichol, Nashville, Tenn.; University of Nashville Medical Department, 1898; member of the Tennessee State Medical Association, Clinical Orthopaedic Society and the American Academy of Orthopaedic Surgeons; formerly assistant professor of orthopedic surgery at the Vanderbilt University School of Medicine and assistant professor of operative surgery at his alma mater; for many years on the staff of the Nashville General Hospital; member of the board of trustees of the Davidson County Tuberculosis Hospital; member of the advisory board of the Junior League Home for Crippled Children, formerly known as the Convalescent Home for Crippled Children, of which he was head of the staff; aged 65; died, Nov. 14, 1941, in Dallas, Texas, of cerebral hemorrhage.

Marius Liborius Abbene, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1914; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; instructor of obstetrics and gynecology at the Long Island College of Medicine; obstetrician, Bushwick Hospital; associate gynecologist and obstetrician, St. Mary's Hospital; associate gynecologist and obstetrician, and chief, gynecological and obstetrical clinic, Greenpoint Hospital; physician for the local draft board in the first and second world wars; aged 55; died, Dec. 9, 1941, of coronary thrombosis.

Casper Walker Jennings, Greensboro, N. C.; Medical College of Virginia, Richmond, 1916; member of the Medical Society of the State of North Carolina and the American Academy of Ophthalmology and Otolaryngology; formerly secretary of the Guilford County Medical Society; past president and secretary of the North Carolina Eye, Ear, Nose and Throat Society; on the staffs of the Wesley Long Hospital, St. Leo's Hospital, Sternberger Hospital for Women and Children, and Piedmont Memorial Hospital; aged 48; died, Nov. 22, 1941, of acute dilatation of the heart.

Greer Baughman * Richmond, Va.; Medical College of Virginia, Richmond, 1897; professor of obstetrics at his alma mater; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons and the Southern Surgical Association; fellow of the American College of Surgeons; visiting obstetrician, Stuart Circle Hospital; consulting obstetrician, Memorial and St. Philip hospitals; formerly surgeon to the fire department of Richmond; aged 67; died, Dec. 2, 1941, of chronic nephritis and uremia.

Eugene John Bozsán * New York; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest, Hungary, 1913; member of the American Association for the Surgery of Trauma; fellow of the American College of Surgeons; served with the Austrian-Hungarian Army during the World War; on the staffs of the Hospital for Joint Diseases and the Morrisania City Hospital; aged 51; died, Dec. 4, 1941.

Hampton Pierson Howell * New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1894; member of the American Laryngological, Rhinological and Otolological Society; attending otolaryngologist of the Roosevelt Hospital from 1929 to 1934 and consultant otolaryngologist since 1935; aged 71; died, Dec. 11, 1941, at his home in Westhampton Beach, N. Y.

Jesse Budren Helm * Medical Director, Captain, United States Navy, Washington, D. C.; University of Louisville (Ky.) Medical Department, 1911; fellow of the American College of

Physicians; entered the naval service July 20, 1913 and was retired on Aug. 1, 1940 for disability incurred in the line of duty; aged 56; died, Nov. 26, 1941, in the Garfield Hospital of hypertensive heart disease.

Maurice Schneider, Chicago; Northwestern University Medical School, Chicago, 1928; was a member of the associate staff of the teaching faculty of the Cook County Graduate School of Medicine, in the division of diseases of children; associate on the staff of the Cook County Children's Hospital; aged 38; died, Dec. 2, 1941, in the Mount Sinai Hospital.

Henry Farrer Owsley, Poughkeepsie, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; veteran of the Spanish-American War; aged 70; died, Nov. 27, 1941, in the Westchester Division of the New York Hospital, White Plains, of bronchopneumonia and arteriosclerosis.

Henry Ernest Paul, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1901; member of the American Urological Association; served during the World War; aged 65; on the staffs of the Christie Street Hospital and St. Joseph's Hospital, where he died, Nov. 7, 1941.

George Wallace Elliott, Vancouver, B. C., Canada; Manitoba Medical College, Winnipeg, 1899; formerly member of the Winnipeg police force; at one time medical immigration officer of the Canadian government at Ellis Island, N. Y., and at Portland, Maine; aged 77; died, Oct. 21, 1941.

George Edwin Shetrone, Shillington, Pa.; Hahnemann Medical College and Hospital, Philadelphia, 1921; member of the Medical Society of the State of Pennsylvania; physician for the county schools; on the staff of the Homeopathic Hospital, Reading; aged 43; died, Nov. 6, 1941.

John Trantham Stephenson, Emmett, W. Va.; University of Georgia Medical Department, Augusta, 1925; member of the West Virginia State Medical Association; served during the World War; formerly a physician in the Indian Service; aged 53; died, Nov. 14, 1941.

James Tilden Christian, Sacramento, Calif.; Cooper Medical College, San Francisco, 1902; member of the California Medical Association; formerly county health officer; served during the World War; aged 63; died, Nov. 30, 1941, in a hospital at San Francisco.

Charles Ashton Webster, Yarmouth, N. S., Canada; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; fellow of the American College of Surgeons; visiting surgeon, Yarmouth Hospital; aged 77; died, Nov. 22, 1941.

John Hill Hammond * La Fayette, Ga.; Jefferson Medical College of Philadelphia, 1883; an Affiliate Fellow of the American Medical Association; for many years chairman of the city board of education; formerly county health commissioner; aged 85; died, Nov. 26, 1941.

James A. Dorsett, Lucedale, Miss.; Atlanta (Ga.) College of Physicians and Surgeons, 1902; member of the Mississippi State Medical Association; at one time mayor of Lucedale; aged 64; died, Nov. 5, 1941, in the Mobile Infirmary, Mobile, Ala.

Henry Hunt Duke, Denair, Calif.; Hospital College of Medicine, Louisville, Ky., 1899; formerly passed assistant surgeon in the United States Public Health Service Reserve; veteran of the Spanish-American and World wars; aged 68; died, Oct. 11, 1941.

Allen Hanson Blake * Somerville, Mass.; Harvard Medical School, Boston, 1904; member of the New England Röntgen Ray Society and the Radiological Society of North America, Inc., on the staff of the Somerville Hospital; aged 60; died, Dec. 9, 1941.

James Eugene Dwyer, Milwaukee; University of Maryland School of Medicine, Baltimore, 1905; served during the World War; aged 64; on the staff of the Veterans Administration Facility, where he died, Nov. 14, 1941, of nephrosclerosis.

William Otto Bailey, East Orange, N. J.; Eclectic Medical College of the City of New York, 1887; University of the City of New York Medical Department, 1889; aged 85; died, Dec. 7, 1941, of cerebral hemorrhage and arteriosclerosis.

Wallace Kasson Harrison * Chicago; Bennett Medical College, Chicago, 1877; College of Physicians and Surgeons of Chicago, 1884; an Affiliate Fellow of the American Medical Association; aged 93; died, Dec. 7, 1941.

Jesse Bird, Oklahoma City; University of Louisville (Ky.) Medical Department, 1896; member of the Oklahoma State Medical Association; aged 66; on the staff of the Samaritan Hospital, where he died, Dec. 9, 1941.

S. Dwight Stevenson, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1890; member of the Ohio State Medical Association; aged 75; died, Nov. 26, 1941, in the White Cross Hospital following an appendectomy.

Warren Alexander Harper, Zapata, Texas; University of Tennessee Medical Department, Nashville, 1892; formerly acting assistant surgeon, United States Public Health Service; aged 75; died, Nov. 29, 1941, in Austin.

Ezra Eugene Osburn, Broughton, Ill.; St. Louis College of Physicians and Surgeons, 1904; aged 59; died, Dec. 1, 1941, in the Ferrell Hospital, El Dorado, of pneumonia and of injuries received in an automobile accident.

J. Michaux Corpening, Harrington, Wash.; University of Nashville (Tenn.) Medical Department, 1898; member of the Washington State Medical Association; aged 74; died, Nov. 1, 1941, of coronary thrombosis.

Winsor W. Warriner, Antioch, Ill.; Northwestern University Medical School, Chicago, 1902; aged 67; died, Nov. 30, 1941, in the Victory Memorial Hospital, Waukegan, of peritonitis and acute appendicitis.

Thomas Chason Ⓢ Donalsonville, Ga.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; at one time medical director and superintendent of Chason's Hospital; aged 68; died in November 1941.

Chalmer Middleton Harger, Seattle; University of Colorado School of Medicine, Denver, 1921; member of the Washington State Medical Association; aged 50; died, Nov. 13, 1941, of coronary thrombosis.

Helen P. Beattie Tennies, Green Bay, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; aged 60; died, Oct. 30, 1941, of chronic myocarditis.

Leo John Nicola Ⓢ Chicago; Chicago Medical School, 1926; aged 41; on the staff of St. Francis Hospital, Evanston, Ill., where he died, Nov. 8, 1941, of patent foramen ovale and cirrhosis of the liver.

Clarence La Motte Boston, Noxen, Pa.; University of the City of New York Medical Department, 1884; member of the Medical Society of the State of Pennsylvania; aged 82; died, Dec. 1, 1941.

John A. Walker, Du Pont, Wash.; Northwestern University Medical School, Chicago, 1893; member of the Washington State Medical Association; aged 72; died, Nov. 15, 1941, in Phoenix, Ariz.

Benjamin Franklin Boyer, Riegelsville, Pa.; Long Island College Hospital, Brooklyn, 1867; Bellevue Hospital Medical College, New York, 1868; Civil War veteran; aged 99; died, Dec. 11, 1941.

Edgar Allen Cowles, Detroit Township, Minn.; University of Tennessee Medical Department, Nashville, 1892 and 1893; also a dentist; aged 80; died, Sept. 1, 1941, of hypertensive heart disease.

John Ellsworth Suter, Piedmont, W. Va.; College of Physicians and Surgeons, Baltimore, 1893; formerly mayor; bank president; aged 71; died, Nov. 29, 1941, of chronic myocarditis.

Harry Francis Rubel, Des Moines, Iowa; College of Physicians and Surgeons, School of Medicine of the University of Illinois, Chicago, 1904; aged 63; died, Nov. 25, 1941, of cirrhosis of the liver.

James Blaine Padgham, Ocheyedan, Iowa; State University of Iowa College of Medicine, Iowa City, 1909; member of the Iowa State Medical Society; aged 58; died, Nov. 9, 1941, of uremia.

Leon Knight Harding, Hopkinsville, Ky.; University of Tennessee Medical Department, Nashville, 1900; also a minister; aged 69; died, Nov. 29, 1941, in a hospital at Atlanta, Ga.

Walter Wynn Barnett, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1886; veteran of the Spanish-American War; formerly county coroner; aged 84; died, Dec. 1, 1941.

James Lowry McBride Ⓢ Zanesville, Ind.; Medical College of Indiana, Indianapolis, 1892; served during the World War; aged 76; died, Nov. 29, 1941, of coronary thrombosis.

Joseph H. Satterthwaite, Trenton, N. J.; Hahnemann Medical College of Philadelphia, 1883; died, Nov. 23, 1941, in the William McKinley Memorial Hospital of heart disease.

John William Long, Sallis, Miss.; Kentucky School of Medicine, Louisville, 1908; member of the Mississippi State Medical Association; aged 56; died in November 1941.

James Malvern Halsey, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1937; aged 30; was found dead, Nov. 23, 1941, of a bullet wound.

William Edward McDougal, Savannah, Tenn.; Vanderbilt University School of Medicine, Nashville, 1877; aged 87; died, November 19, at Memphis of cerebral hemorrhage.

George Brannan Allen Ⓢ South Bend, Ind.; Northwestern University Medical School, Chicago, 1916; aged 53; died, Dec. 4, 1941, of angina pectoris and coronary sclerosis.

Arminius Neulaender, Brooklyn; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása, Budapest, Hungary, 1898; aged 67; died, Nov. 21, 1941.

Spurgeon Floyd Priestley, Stockton, Calif.; Barnes Medical College, St. Louis, 1898; member of the California Medical Association; aged 73; died, Nov. 23, 1941.

Paul Clifton Alexander, Redwood City, Calif.; Cooper Medical College, San Francisco, 1900; aged 67; died, Dec. 6, 1941, in the Palo Alto (Calif.) Hospital.

Oscar Leonard Spencer, Fiskeville, R. I.; Boston University School of Medicine, 1911; aged 75; died, Nov. 27, 1941, at Cranston of cardiorenal disease.

Frank H. Sidwell, Baltimore; University of Maryland School of Medicine, Baltimore, 1880; died, Nov. 22, 1941, in the Maryland General Hospital.

William Hubert Arrants, Sweetwater, Tenn.; University of Nashville (Tenn.) Medical Department, 1910; aged 59; died, Dec. 13, 1941, of myocarditis.

Erasmus Lear Reigle, Bloomsbury, N. J.; Jefferson Medical College of Philadelphia, 1889; aged 78; died, Nov. 29, 1941, in Easton, Pa., of empyema.

Esca D. Pope Ⓢ Hillister, Texas; Kentucky School of Medicine, Louisville, 1897; aged 69; died, Nov. 26, 1941, of cerebral hemorrhage.

James Sidney Smith, Greenville, Texas (licensed in Texas, under the Act of 1907); aged 86; died in November in a hospital at Dallas.

Ernest Bartine Smith, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1900; aged 65; died, Nov. 28, 1941.

Frank C. Houser, Lincoln, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1887; aged 83; died, Nov. 26, 1941.

Amelia Landis Hess, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1892; aged 83; died, Nov. 25, 1941.

Guy Edward Beard, Algonquin, Ill.; Northwestern University Medical School, Chicago, 1910; aged 61; died, Dec. 11, 1941.

William Henry Kensinger, Miami, Fla.; Jefferson Medical College of Philadelphia, 1889; aged 85; died, Nov. 23, 1941.

Julius Purcell Haynes, Toledo, Ohio; Dartmouth Medical School, Hanover, N. H., 1888; aged 75; died, Nov. 17, 1941.

James Alexander Morrow, Philadelphia; Baltimore University School of Medicine, 1889; aged 81; died, Nov. 28, 1941.

Fred William Watt, Bieber, Calif.; Cooper Medical College, San Francisco, 1901; aged 66; died in November 1941.

Archie Wilson Barker, Springfield, Ill.; Barnes Medical College, St. Louis, 1899; aged 74; died, Dec. 4, 1941.

Haller Francis Keables, Burbank, Calif.; Rush Medical College, Chicago, 1890; aged 76; died, Nov. 2, 1941.

Esther Mitchell, Mount Sterling, Ky.; Rush Medical College, Chicago, 1903; aged 75; died, Nov. 30, 1941.

William K. Yorks, Chicago; Hering Medical College, Chicago, 1900; aged 76; died, Nov. 26, 1941.

Frederick Dow Lyon, Boston; Harvard Medical School, Boston, 1896; aged 72; died, Nov. 27, 1941.

Bureau of Investigation

CEASE AND DESIST ORDERS

Abstracts of Certain Federal Trade Commission Releases

The work of the Federal Trade Commission, in helping to protect the public against misrepresentation or fraud in the medical as well as other fields, has been greatly extended by the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act. The Food, Drug and Cosmetic Act of 1938 added to the Food and Drug Administration's control of the advertising claims and statements made on the labels of medicines or on the carton or in the accompanying leaflet, whereas what might be termed collateral advertising, that which appears in circulars, newspapers and magazines and over the air, comes more actively under the purview of the Federal Trade Commission, by virtue of the Wheeler-Lea Amendment.

THE JOURNAL has at various times commented on the activities of the Federal Trade Commission in this connection, even before the Wheeler-Lea Amendment gave it its added rights. In some cases the Commission may accept from the person or concern involved a stipulation that the objectionable practices or claims cited will be discontinued. In other cases the Commission issues what is known as a Cease and Desist Order, in which the individual, manufacturer or distributor cited is ordered to cease and desist from practices which have been declared objectionable.

Abstracts of some of the orders issued in 1941 follow:

Alcoban.—This was exploited as a treatment for alcoholism by Edwin L. Leisenring, trading as U. S. Drug and Sales Company, U. S. Drug Laboratories and U. S. Drug Company, and Gordon Leisenring, both of Denver. The Federal Trade Commission ordered these individuals in January 1941 to cease representing that the product is a safe and competent treatment for alcoholism or that it removes the desire for alcoholic stimulants. They also were to discontinue any advertisements which fail to reveal that the use of Alcoban may result in serious injury to the nerves, tissues and lungs and may produce toxic conditions in the body.

Bowe's Tablets.—The advertising of this nostrum by R. G. Bowe and W. W. Hartman, trading as Bowe & Hartman, Toledo, Ohio, represented that some twenty ailments, including ulcers of the stomach, duodenum and intestine are due to or persist solely because of hyperacidity or the presence of excess acid in the body and that the Bowe product is a cure or remedy for hyperacidity and consequently for the ailments mentioned. In January 1941 the Federal Trade Commission ordered the promoters of Bowe's Tablets to discontinue making these misrepresentations and setting themselves forth as manufacturing pharmacists or as making the preparation that they sell.

Eucozone.—This was put out by Eucozone Laboratories, Inc., and by its successor, Universal Eucozone of America, Inc., Detroit. In March 1941 the Federal Trade Commission ordered the last-named concern to cease representing that the product is a germicide or has any therapeutic action beyond that of a mild antiseptic and counterirritant; that it is an internal antiseptic or will supply oxygen to the bloodstream; that it is of any value in treating colds, catarrh, sinus infection, rose fever, hay fever or localized congestions associated with such conditions, except that afforded by a mild antiseptic and counterirritant; that it is a cure or remedy for athlete's foot or has any action thereon, except as a mild antiseptic; that it is of any use in treating itch, carbuncles, irritations of the skin or hemorrhoids or is nonpoisonous or nonirritating and suitable or safe for internal use or that it is an ozonide of eucalyptol or has any therapeutic properties other than those of ordinary oil of eucalyptus or eucalyptol.

George's Compound.—J. Lawrence Walker and T. Kyle Woodward, trading as Walker and Woodward, and Nick A. George and John G. Brown, all of Casper, Wyo., promoted this product as having value in the treatment of all ailments except cancer and diabetes. Since the Federal Trade Commission's findings showed that the stuff was useless for the long list of disorders named, except as a temporary palliative, the defendants were ordered in February 1941 to cease and desist from making misrepresentations in their advertising. Incidentally, in at least 2 cases on record, George's Compound has been declared to violate the Pure Food and Drugs Act because of false claims made in or on the trade package. The first case was abstracted in this department of THE JOURNAL Dec. 23, 1939, page 2339.

Kongolene.—In January 1941 the Federal Trade Commission ordered the Kongo Chemical Company, Inc., of New York to discontinue certain misrepresentations in its advertising of this hair preparation. Among these were that the product is harmless to use, is a "purely vegetable product," will permanently straighten the hair or contribute to such straightening in any way other than by softening the hair temporarily, will promote the growth of the hair and prevent its falling out, will cure dandruff, will benefit the offspring of the user and is "the greatest discovery of the age." The concern also was ordered to discontinue any advertisements which failed to reveal that the use of the stuff might result in severe caustic action on the skin and scalp, with resulting burns. In April 1941

the Commission added to the order the proviso that the advertising of Kongolene need contain only a statement that the product should be used only as directed on the label, when such label contains a warning that the preparation might have a caustic action on the skin and scalp with resulting burns, and certain directions for the safe and proper use of Kongolene which were detailed in the original order.

Nu-Mode Products.—These are promoted by Harry S. Benham of Chicago, who has operated under such names as the Zone Company, Active Merchandisers, Active Medicine, Nu-Mode Company and American Medicine Company. In January 1941 the Federal Trade Commission ordered Benham to discontinue advertisements containing certain misrepresentations. Among these were that "Nu-Mode Vaginal Jelly" (also known as "A. M. Vaginal Jelly"), "Nu-Mode Hygiene Tablets," "Vaginal Suppositories and Douche Tablets," and "Speed Nu-Mode Hygiene Douche Tablets" constitute safe and effective preventives of conception or are a guaranteed method of preventing pregnancy; that "Nu-Mode Ladies Womb Supporter" is comfortable, efficient or sanitary or has therapeutic value; that "Athlete's Foot Salve" is a cure or remedy for athlete's foot or has value in its treatment in excess of temporarily relieving symptoms of itching and in some cases destroying superficial fungi; that "A. M. Wonder Salve" is a cure or remedy for eczema or other forms of itch or rash or has value in their treatment in excess of affording temporary relief from symptoms of itching, or that it has any properties effective in preventing infection or in treating ulcers, old sores, leg sores, acne or pimples.

Nuga-Tone.—National Proprietaries, Inc., of Chicago were ordered by the Federal Trade Commission in January 1941 to discontinue advertisements which represent Nuga-Tone as possessing any value in the treatment of nervous disorders or which fail to reveal that the use of the nostrum may result in chronic poisoning, irritation of the kidneys, nervous irritability, neuritis or some other conditions. In November 1937 the Commission likewise had ordered the National Laboratory of Chicago (which was then putting out Nuga-Tone) to discontinue certain false representations about the product, such as that it was an effective remedy for various stomach complaints and could be taken over long periods by any one without harmful results. The Commission also ordered the concern to cease representing itself as a "Laboratory," which may have been the reason that the firm name was changed. A lengthy discussion of Nuga-Tone and of the 2 year old child who had convulsions after swallowing some of the tablets appeared in THE JOURNAL May 17, 1924, page 1628.

Purex.—This product is put out as a germicide by the Purex Corporation, Ltd., Southgate, Calif., which in January 1941 was ordered by the Federal Trade Commission to withdraw from its advertising the misrepresentations that a solution containing any amount of less than 10 per cent of Purex is a competent or effective germicide for treating surface cuts or sores, or that a solution containing 2 tablespoons of Purex to each gallon of water is capable of killing all forms of bacterial life.

ReVigator Products.—In February 1941 the Federal Trade Commission ordered the ReVigator Corporation of Cleveland and its president, E. O. Loeber, to cease making certain misrepresentations in the sale of these. Among them were that the "ReVigator System of Home Treatment for the Scalp and Hair" provides a cure for falling, fading and thinning hair, dandruff and baldness. The Commission's findings were that the use of the "ReVigator Pressure Cap" alone or in combination with the other products in the treatment ("ReVigator Liquid Home Treatment for Scalp and Hair" and "ReVigator Liquid Shampoo") would not accomplish the results claimed and would have no therapeutic value in treating such conditions in excess of cleansing the hair and scalp and temporarily removing accumulated dandruff scales.

Texas Wonder.—For years this product has been represented as a cure for bladder and kidney disorders and has been the subject of actions by the Food and Drug Administration in more than one hundred instances over a period of years, on the charge that the label claims violated the Pure Food and Drugs Act. The first case was abstracted in this department of THE JOURNAL Feb. 22, 1919, page 591. In May 1932 the Federal Trade Commission dismissed a complaint against E. B. Hall and E. W. Hall of St. Louis on the charge of misrepresentations in advertising, at which time the Halls signed a stipulation agreeing to cease and desist from the practices charged. In February 1941 the Commission again was obliged to take action against the Halls and definitely ordered them to discontinue advertising that "Texas Wonder" is of value in the treatment of any of the ailments mentioned (kidney disorders, diabetes, rheumatism, swollen joints, weak or lame back, pains in the back or lumbago) except for such slight symptomatic relief as it may give in cases of swollen joints or pains in the back, because of its mild diuretic properties.

Vendol.—In January 1941 one David H. Fulton, trading as Vendol Company, Baltimore, was ordered by the Federal Trade Commission to eliminate from his advertising certain representations that the Commission declared to be false and misleading, such as that the product is a cure or remedy for constipation, stomach disorders, liver ailments, skin troubles or dyspepsia or is effective therefor, within certain limits; or, without making certain reservations, that the product will cure rheumatism, headaches, excess acidity, palpitation and some other things. In March 1937 David H. Fulton had promised the Commission that he would discontinue certain misrepresentations in his advertising, such as that Vendol would correct any physical ailment including certain disorders of the stomach, liver and kidneys and that Vendol was prescribed by a physician.

X-Bazln.—This hair remover was represented by Hall & Ruckel, Inc., Brooklyn, as being noncaustic and in all cases entirely harmless. It was claimed that it discouraged the growth or delayed the appearance of hair for a substantial period of time, permanently eradicating hair, producing results essentially different from those obtained by the use of other depilatories and having the endorsement of scientists or physicians. In January 1941 the Federal Trade Commission ordered the concern to discontinue these misrepresentations.

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some Fraud Orders not dealt with previously.

Bartlett "Cures" for Liquor and Tobacco Habits—These were exploited from Birmingham, England, by a William Bartlett, who also used a Winnipeg, Canada, address and operated under various names including W. Bartlett Co. and Reliance Products. His "Bartlett Tobacco Treatment" was found to consist of gentian root to be chewed and some tablets to be swallowed, each containing more than 2 grains (0.13 Gm.) of quinine sulfate. Those who ordered the "Bartlett Liquor Remedy" received a prescription calling for 90 parts of sodium bicarbonate, 5 parts of powdered cuminum cuminum and 5 parts of powdered cinnamon, to be made up into 150 capsules of 1½ grains (0.1 Gm.) each. Medical experts testified that the most important factors in overcoming the liquor and tobacco habits are the determination and cooperation of the victim and that, since these cannot be supplied by drugs, no mixture could of itself cure either habit. A fraud order debarbing the Bartlett nostrums from the mails was issued on July 30, 1940.

Blanchard's Lotion—This was a curious combination of medical and religious quackery promoted by a Joseph Blanchard, who conducted his mail order scheme from Chicago, New York and Long Beach, Calif. He put out something variously called "Joseph Blanchard's Eczema Lotion" and "Trinity Lotion," which he represented as a cure for eczema, psoriasis, acne, leg ulcers and all infections and irritations of the ear, nose and mouth. With it went some circulars, one known as "Spiritual Copy No. 3," which exhorted in part "Always apply Trinity Lotion for a Spiritual Soul Blessing." Apparently discounting the alleged spiritual value in favor of the material one, the government chemists analyzed the product and reported it to be a slightly acidic, hydroalcoholic, mucilaginous liquid containing 0.04 per cent of mercury, 9.1 per cent of alcohol and an unidentified mixture of gums. As this combination would not cure such comparatively intractable conditions as psoriasis and eczema, the Post Office Department declared the thing a fraud and debarred it from the mails on August 31, 1940. In April 1935 a consignment of "Prof. Joseph Blanchard's Eczema Lotion" from Chicago was declared in a district federal court to be fraudulently represented on the label as an effective treatment for various forms of eczema, psoriasis, ulcers and some other cutaneous disorders. Government chemists reported that it consisted essentially of mercury bichloride, alcohol and water, with small amounts of borax and gum.

"Dr." O. T. Manson—This Waycross (Ga.) Negro charlatan also worked the "numbers" game and sold advice and medicines chiefly among Negro victims. After promising an inquirer to "bring you strong and alive" for \$3 and receiving that sum, he demanded an equal amount in addition to "fix up" the patient. When the second remittance of \$3 was sent, Manson demanded an additional \$2 and, on getting it, sent the customer an assortment of capsules and pills. The composition of both was found to be essentially calomel, aloin and podophyllin. As these are only common laxatives and would not "fix up" certain serious diseases whose symptoms were suggested by the customer, Manson's scheme was declared fraudulent and was debarred from the mails on June 7, 1940.

"Rev. Doc J. H. Thompkins"—This self-styled "spiritualist and divine healer," as well as "world's greatest fortune teller," a Negro, operated first from Columbus, Ga., and later from Phenix City, Ala., selling "lucky hands." These, he claimed, would "Uncross Your Luck, Do Anything You Want Done, Cure Anything You Want Cured, Bring Back Husband, Wife or Friend, and Make You See Wonders, I See All, Tell All, Make All, Know All, Do All." A "lucky hand," for which Thompkins charged from \$15 to \$985, consisted chiefly of "science" of numbers, "religious" literature and a small bag of grayish white powder. Analysis showed this to consist of iron ore, powdered sulfur, ground capsicum, gentian and sage leaves. The customer was told to add a teaspoonful of urine to this daily for three days, "dress" it with perfume and wear it close to the body. As this mixture obviously would not cure anything, a Post Office fraud order was issued against Thompkins on Feb. 29, 1940.

Young and Smit—This New York firm, which designated itself as an importer of medicines originating in the Dutch East Indies, consisted of a Ralph Young and an Antonette Smit, who sold a long list of nostrums by mail. The chief one seems to have been "Herb Preparation No. 17," which a government analysis showed was a mixture of ground mint leaves, spurge, celery root and a species of bean. It was to be brewed and taken for rheumatism four times a day "until pains disappear." If one was "looking for a pleasant way to help take off excess fat," he was told that "Bali Tea No. 13" is the answer to your prayer! It was reported to consist chiefly of ground leaves and roots of mint, black elder and ginger. For disorders of the kidney and bladder there was "Koemis Koetjing No. 21," which was principally ground mint leaves. For liver troubles the concern sold "Hepatic Tea No. 2," a mixture of ground leaves and roots of herbs known as graptophyllum, hydrocotyle, curcuma, plantago major and blumea balsamifera. For "piles and rectal disturbances" there was "Herbal Preparation No. 9," a mixture of melonbitter, acanthaceae, tamarindus, rhubarb and licorice roots and hydrocotyle cernacanthaceae, with traces of arbus and euphorbia. With it came "Java Lax Herbs No. 7," said to be composed of herbs having irritant laxative qualities. As expert medical testimony showed that none of these nostrums would produce the results claimed for them, a fraud order was issued against their promoters on Dec. 5, 1940.

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Massagic—This is the brand name for a line of shoes sold by the Wejenberg Shoe Manufacturing Company of Milwaukee, which represented that they would massage and exercise the feet and produce "massaging resilience," cause calluses to vanish and keep the feet "young." In a stipulation signed with the Federal Trade Commission in June 1941 the concern agreed to discontinue these misrepresentations.

Wa-Hoo Bitters—This is put out by a Charles K. Wilson, trading as Old Indian Medicine Company and as Wa-Hoo Medicine Company, Toledo, Ohio. In January 1941 Wilson promised the Federal Trade Commission to cease representing that his product is a tonic or effective treatment for ailments of the blood, nerves, stomach, liver or kidneys or a remedy for rheumatism, gastritis and some other things, or that his "Old Indian Remedy" or "Old Indian Root and Herb Tonic" originated with the Indians before they were acquainted with recognized medical science. In 1916 and 1935 specimens of "Wa-Hoo Bitters" were declared in government courts to violate the Pure Food and Drugs Act because of false and fraudulent claims on the labels. Government chemists reported that analyses of specimens showed them to be aqueous solutions of epsom salt and salicylic acid, with indications of sassafras, gentian and prickly ash.

Valeria's Hair Grower—That this will cause the natural oils of the scalp to be retained or overcome dryness of the scalp, stop excessive dandruff or falling hair or cause hair to grow constitutes advertising misrepresentations which Dave Boston and Willma Boston, trading as Valeria's Products and as Valeria's, Detroit, promised the Federal Trade Commission that they would discontinue in a stipulation that they signed in June 1941.

"Vegetate" Products—These are put out by Vegetates, Inc., of Los Angeles and include "Vege broth," "Vegetate BF 1," "Vegetate Formula No. CC 413" and thirteen other preparations. In February 1941 Vegetates, Inc., stipulated with the Federal Trade Commission that it would cease representing that modern conditions cannot assure the full measure of life sustaining organic minerals in the food one buys or cooks today, that the "Vegetate" formulas are concentrated or contain all the concentrated goodness of nature's own vegetables or of vegetables grown in a specially mineralized soil, or that they give added protection to persons having low resistance. The concern also agreed to cease advertising that "Vegetate 'Carra' Fortified with Vitamin 'A'" is a protection against infection or that "Wheat Germ Oil Perles, Standard Potency Vitamin 'E'" are essential during pregnancy and are of the highest available potency and to discontinue various similar misrepresentations about others of its products. In April 1937 a district federal court had declared that certain of the Vegetate products were fraudulently represented to be "health builders" and to cure various disorders. These included "BF 1," "Formula H T C No. A 45" (for arthritis), "Formula H. T. C. No. D 44" (for diabetes), "Formula H T C No. A 417" (for hay fever and asthma) and "Formula H T C No. H 410" (for high blood pressure).

Williams Foot Preparations—In January 1941 the Federal Trade Commission reported that William Newman, trading as Newman Products Company and The Newman Institute, Brooklyn, had promised to cease representing that his "Williams Korn-X," "Williams Foot Balm," "Williams Foot Shampoo" and "Williams Foot Powder" are competent remedies for athlete's foot, swollen ankles, ingrown toenails, corns, warts and other foot troubles or that the use of these products would alleviate headaches, backaches or fatigue.

Z'Out—This product, also known as "Dr. Frohlich's Z'Out Hair Destroyer," has back of it a Louis B. Frohlich, trading as the Frohlich Laboratories, and a David F. Griff, doing business as Frohlich Distributing Company, all of Seattle. In April 1941 they promised the Federal Trade Commission to cease representing that the product will permanently destroy hair, prevent the regrowth of hair or bring about the permanent removal of hair, that it possesses any marvelous qualities or that its development is the result of seven years' work or of any amount of work, effort, experimentation or research greater than that actually used or performed in its development. In recent years the Frohlich concern has sent out a report, attributed to a Seattle chemical laboratory, to the effect that the powder form of "Z'Out" seems to depend, for its action, on strontium sulfide.

Fairystone—Ray G. Maloney, trading as Fairystone Manufacturing Company, and Willard J. Dungan and Arthur E. Maloney, doing business as Fairystone Distributing Company, all of Detroit, promised the Federal Trade Commission in April 1941 to cease representing that the "Fairystone" is an "absolute sunburn protection" which filters out the burning or ultraviolet rays of the sun and permits other sun rays to gain access to the skin or that it will effectively conceal scars, birth marks or other cutaneous blemishes, or cause those who use it to look years younger, or will prove a competent remedy for pimples or blotched skin.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospi-
tals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

MEDICAL CORPS, UNITED STATES NAVY

Examination. Assistant Surgeon with the permanent rank of Lieutenant
(junior grade) and Acting Assistant Surgeon with the probationary rank
of Lieutenant (junior grade), Jan. 5-9. Examination will be held at the
Naval Hospitals at Chelsea, Mass., Newport, R. I., Brooklyn, Philadelphia,
Norfolk, Va., Charleston, S. C., Pensacola, Fla., Corpus Christi, Tex.,
San Diego and Mare Island, Calif., Puget Sound, Wash., Great Lakes,
Ill., Pearl Harbor, T. H., and Naval Medical Center, Washington, D. C.
Apply Bureau of Medicine and Surgery, Navy Department, Washington,
D. C.

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners
in the basic sciences were published in THE JOURNAL, January 3, page 76.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various
centers, Feb. 9-11. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St.,
Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE: Oral. April in advance
of the meeting of the American College of Physicians and June, in
advance of the meeting of the American Medical Association. Applications
should be on file 6 weeks in advance of the date of oral examination.
Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: New York, June.
Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Oral. Part II.
Groups A and B Atlantic City, May or June. Final date for filing applica-
tion is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Oral and Written. All
Groups. Philadelphia, June, preceding the meeting of the American
Medical Association. Final date for filing application is March 1. Sec.,
Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PATHOLOGY: St. Louis, March 30-31. Final date
for filing application is Jan. 30. Sec., Dr. F. W. Hartman, Henry Ford
Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Oral. Cleveland, May 13, preceding
the Region III meeting of the American Academy of Pediatrics.
Written. Locally, February 14. Sec., Dr. C. A. Aldrich, 707 Fullerton
Ave., Chicago.

AMERICAN BOARD OF RADIOLOGY: Oral. All Groups. Atlantic City,
June 4. Final date for filing application is April 1. Sec., Dr. Byrl R.
Kirklin, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Written. Part I. Various centers,
March 2. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Phila-
delphia.

District of Columbia Reciprocity Report

The District of Columbia Commission on Licensure reports
27 physicians licensed to practice medicine by reciprocity from
June 10 through September 19. The following schools were
represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical School.....	(1937)		California
University of Southern California School of Medicine..	(1938)		California
George Washington University School of Medicine....	(1931)		California,
(1937) Pennsylvania			
Georgetown University School of Medicine.....			New Jersey
Howard University College of Medicine.....			Virginia
Indiana University School of Medicine.....			Indiana
Louisville Medical College.....	(1906)		Mississippi
University of Louisville Medical Department.....	(1910)		Texas
University of Maryland School of Medicine and Col- lege of Physicians and Surgeons.....	(1937), (1939)		Maryland
Detroit College of Medicine and Surgery.....	(1933)		Michigan
Columbia University College of Physicians and Sur- geons.....	(1927)		New York
Cornell University Medical College.....	(1937)		New York
Long Island College of Medicine.....	(1938)		Penna.
New York University College of Medicine.....	(1936)		New York
University of Cincinnati College of Medicine.....	(1933)		Ohio
Hahnemann Medical College and Hospital of Phila- delphia.....	(1937), (1938)		Penna.
Jefferson Medical College of Philadelphia.....	(1938)		Penna.
Temple University School of Medicine.....	(1938)		Penna.
Medical College of the State of South Carolina.....	(1935)		S. Carolina
Meharry Medical College.....	(1939)		Tennessee
University of Tennessee College of Medicine.....	(1921)		Arkansas
Vanderbilt University School of Medicine.....	(1915)		Tennessee
University of St. Andrews Conjoint Medical School...	(1936)		New York
Osteopath *			Michigan

* Licensed to practice surgery.

Oregon October Report

The Oregon State Board of Medical Examiners reports 10
physicians licensed to practice medicine by reciprocity and 1
physician so licensed on endorsement of credentials of the
National Board of Medical Examiners from September 20
through October 16. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Stanford University School of Medicine.....	(1939)		California
University of Colorado School of Medicine.....	(1939)		Colorado
Northwestern University Medical School.....	(1924)		Nebraska
University of Louisville School of Medicine.....	(1940)		Kentucky
St. Louis University School of Medicine.....	(1925)		Nevada,
(1939) Missouri			
New York Homeopathic Medical College and Flower Hospital	(1935)		New York
University of Oklahoma School of Medicine.....	(1937)		Kansas
University of Oregon Medical School.....	(1940)		California
Osteopath *			Nebraska

School	LICENSED BY ENDORSEMENT	Year Grad.
Johns Hopkins University School of Medicine.....	(1934)	

* Licensed to practice surgery.

South Carolina November Report

The State Board of Medical Examiners of South Carolina
reports the oral and written examination for medical licensure
held at Columbia, Nov. 10-11, 1941. The examination covered
17 subjects and included 39 questions. An average of 75 per cent
was required to pass. Three candidates were examined, all of
whom passed. Nine physicians were licensed to practice medi-
cine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Louisville School of Medicine.....	(1937)		1
Medical College of the State of South Carolina.....	(1941, 2)		2

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine.....			Georgia
University of Louisville School of Medicine.....			Kentucky
University of Maryland School of Medicine.....			
of Physicians and Surgeons.....	(1929)		Maryland
Meharry Medical College.....	(1929), (1940, 3)		Tennessee
University of Virginia Department of Medicine.....	(1936)		N. Carolina,
(1937) Virginia			

Wyoming October Report

The Wyoming State Board of Medical Examiners reports
the written examination held at Cheyenne, Oct. 6, 1941. Five
candidates were examined, all of whom passed. The following
schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists.....	(1941)		1
Louisville Medical College.....	(1902)		1
University of Louisville School of Medicine.....	(1940)		1
University of Oklahoma School of Medicine.....	(1939)		1
University of Pennsylvania School of Medicine.....	(1938)		1

District of Columbia November Report

The District of Columbia Board of Examiners in Medicine
and Osteopathy reports the written examination for medical
licensure held in Washington, Nov. 10-12, 1941. The exami-
nation covered 9 subjects and included 60 questions. An aver-
age of 75 per cent was required to pass. Ten candidates were
examined, all of whom passed. Twenty-one physicians were
licensed to practice medicine on endorsement of credentials of
the National Board of Medical Examiners. The following
schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine.....	(1939),		
(1940, 3)			4
Georgetown University School of Medicine.....	(1938), (1939),		
(1940)			3
Howard University College of Medicine.....	(1940, 2)		2
Rush Medical College.....	(1922)		1

School	LICENSED BY ENDORSEMENT	Year Grad.
George Washington University School of Medicine.....	(1939, 2), (1940)	
Georgetown University School of Medicine.....	(1937), (1938),	
(1939, 2), (1940, 7)		
Rush Medical College.....	(1932)	
Johns Hopkins University School of Medicine.....	(1933)	
Harvard Medical School.....	(1937)	
Tufts College Medical School.....	(1937)	
Columbia University College of Physicians and Surgeons.....	(1928)	
Duke University School of Medicine.....	(1939)	
University of Oregon Medical School.....	(1929)	

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Right of Board of Medical Examiners to Revoke License of Naturopath; Right of Naturopaths to Prescribe Drugs.—The plaintiff, Henry Gross, obtained a certificate issued by the board of examiners of the Association of Naturopaths of California and, on the purported authority of that certificate, commenced the practice of naturopathy in the city of Los Angeles. In 1909 a statute was enacted which provided that persons who held "an unrevoked certificate" issued by the Naturopathic Association and who had practiced naturopathy prior to the passage of the 1909 act were authorized to continue such practice and entitled to have such certificate endorsed by the board of medical examiners. This act also provided:

But all certificates herein mentioned may be revoked for any unprofessional conduct, in the same manner and upon the same grounds as if they had been issued under this act.

In 1913 the existing medical practice act was repealed and a new one enacted under which persons desiring to practice naturopathy could secure drugless practitioners' certificates from the board of medical examiners. In 1937 the medical practice act was codified and became a part of the Business and Professions Code. Subsequently the plaintiff was charged with a violation of the Business and Professions Code in that he administered and prescribed drugs to his patients. The board of medical examiners found him guilty and placed him on probation for three years. Accordingly the plaintiff filed a petition for a writ of mandate directing the board to dismiss the charges which had been filed against him and restraining the board from preventing the plaintiff from prescribing for his patients. From a judgment sustaining the board's demurrer and dismissing the plaintiff's petition, the plaintiff appealed to the district court of appeal, second district, division 2, California.

The plaintiff first contended that the board of medical examiners had no jurisdiction over him because all of the statutory provisions relating to naturopaths were eliminated from the 1913 law creating the respondent board. The district court of appeal said that the legislature, by comprehensive enactments, intended to regulate all persons engaged in any of the various healing arts. When the plaintiff's certificate was endorsed pursuant to the provisions of the 1909 act, the effect was the same as if the board of medical examiners had actually issued a new license. Furthermore, the 1909 act specifically authorized disciplinary proceedings against the holders of such endorsed certificates. The court therefore held that the board had jurisdiction over the plaintiff and that it would be unreasonable to conclude that all practitioners of the healing art were subject to regulation except those who were practicing naturopathy in 1909.

The plaintiff also contended that he did not perform any acts not permitted by his naturopathic certificate. The laws of California did not define naturopathy but the articles of incorporation of the Association of Naturopaths provided that its members were authorized to treat patients by the use of "herbs" and other specifically named agencies. The evidence showed that, for at least one of his patients, the plaintiff prescribed a substance known as Alpha Naphco, which bore the following matter on its label, as read into the record by the Deputy Attorney General:

Alpha Naphco, formerly Benetol. Activity—(spelling) Phen. coef.—I imagine that is "coefficient." (continuing reading): "—H. L. Test 1.46. Phenol coefficient against yellow pus germs in $\frac{1}{2}$ blood serum $\frac{1}{2}$ saliva at body heat 3.11. Inert Ingredient—Ined.—" It reads here—(continuing reading): "Glycerine 32%, Water 40%. Contents—Not less than six ounces liquid. Carel Laboratories, Redondo Beach, California, Formerly Benetol Products Co."

He also prescribed a beef extract which was not composed of herbs in their natural form. Expert testimony, said the court, was not needed to show that the prescription of capsules of grayish powder and a liquid with a large content of glycerin could not be classified as the use of herbs. The district court

of appeal therefore held that the evidence was sufficient to sustain a finding that the defendant had prescribed substances which were a part of materia medica and could not be classified as "herbs." The action of the board was therefore sustained.—*Gross v. Molony*, 102 P. (2d) 816 (Calif., 1940).

Contracts: Validity of Agreements in Restraint of Professional Practice.—The plaintiff and the defendant formed a partnership for the practice of medicine in Lumberton, N. C. The agreement provided for the dissolution of the partnership on ninety days' written notice and contained a provision under which the defendant agreed not to engage in the practice of medicine in Lumberton, or within 100 miles thereof, for a period of five years following the dissolution of the partnership. Later the partnership was dissolved and thereafter the defendant opened an office in Lumberton for the practice of medicine. The plaintiff brought suit to enjoin the defendant from practicing medicine contrary to the partnership agreement and, from an order granting a restraining order and continuing it until final hearing, the defendant appealed to the Supreme Court of North Carolina.

The plaintiff contended that the contract was clear and unambiguous and freely entered into; the defendant contended that it was void because contrary to public policy. The Supreme Court said that, actually, public policy is concerned with both sides of the question; it favors the enforcement of contracts intended to protect legitimate interests and frowns on unreasonable restrictions. In the opinion of the court it is as much a matter of public concern to see that valid contracts are observed as it is to frustrate oppressive ones. The determinative factor is the reasonableness of the agreement. The Court found that both of the parties regarded the restriction as reasonable when they signed the agreement and that both were familiar with the situation. The defendant himself had insisted that an agreement be signed, and he did not then object to the restrictive covenant. Both parties felt, at the time the agreement was executed, that the plaintiff had a legitimate interest to protect, and the restriction itself was reasonably limited as to both time and place. The Supreme Court therefore held that the defendant was bound by his agreement and could not, looking at it retrospectively, regard it as unwise and seek to void it on grounds of public policy. The contract was not forbidden by any principle of policy or law. The defendant could be as useful to the public at any other town as he could at Lumberton, and the lives and health of persons in other villages were just as important. Communities therefore were not injured, concluded the Court, by a stipulation of this kind between two physicians. The restraining order was affirmed.—*Beam v. Rutledge*, 9 S. E. (2d) 476 (N. C., 1940).

Chiropractors: License as Prerequisite to Collection of Fees.—In this case the court of civil appeals of Texas denied relief to a chiropractor who had sued a patient to recover compensation for services rendered. The chiropractor had no license to practice in Texas and the court held that, since he had no legal right to perform the services, he could not lawfully make and collect a charge therefor.—*Park v. Coulson*, 139 S. W. (2d) 667 (Texas, 1940).

Society Proceedings

COMING MEETINGS

Annual Congress on Industrial Health, Chicago, Jan. 12-13. Dr. C. M. Peterson, 535 North Dearborn St., Chicago, Secretary.
Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17. Dr. William D. Cutler, 535 North Dearborn St., Chicago, Secretary.

American Academy of Orthopedic Surgeons, Atlantic City, N. J., Jan. 11-15. Dr. Rexford L. Diveley, 1103 Grand Ave., Kansas City, Mo., Secretary.

American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norvelle C. LaMar, 149 East 73d St., New York, Secretary.

Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.

Pacific Coast Surgical Association, San Francisco and Del Monte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.

Society of Surgeons of New Jersey, Trenton, Jan. 23. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

22:439-582 (Oct.) 1941

- *Rheumatic Infection in Childhood: Influence of Type of Onset and Calendar Year of Onset. Rachel Ash, Philadelphia.—p. 439.
- Further Observations on Mechanism of Production of Short PR Interval in Association with Prolongation of QRS Complex. C. C. Wolferth and F. C. Wood, Philadelphia.—p. 450.
- *Arteriosclerotic Aneurysms and Senile Ectasia of Thoracic Aorta. M. deG. Ruffin, B. Castleman and P. D. White, Boston.—p. 458.
- *Normal and Abnormal Esophageal Electrocardiogram, with Particular Reference to Myocardial Infarction. J. Nyboer, New York.—p. 469.
- *Objective Evidence of Efficacy of Medicinal Therapy in Angina Pectoris. A. S. Freedberg, J. E. F. Riseman and E. D. Spiegl, Boston.—p. 494.
- *Octyl Nitrite in Treatment of Angina Pectoris. A. S. Freedberg, E. D. Spiegl and J. E. F. Riseman, Boston.—p. 519.
- Effect of Abrasion of Surface of Heart on Inter coronary Communications. E. J. Stanton, P. Schildt and C. S. Beck, Cleveland.—p. 529.
- The Coronary Operation. C. S. Beck, Cleveland.—p. 539.
- Sympathectomy and Experimental Occlusion of Coronary Artery. A. Yodice, Buenos Aires, Argentina.—p. 545.

Rheumatic Infection in Childhood.—Ash made a follow-up study of 583 children whose rheumatic infection had occurred during 1922 to 1936, inclusive, and who were cared for at the Children's Hospital. In 1939, 527, or 90.4 per cent, of these children were traced. Twenty-six of the untraced children had been followed previously for three to thirteen years; thus the average follow-up period for 553 rheumatic children was nine and six-tenths years. At the end of this time, 64.2 per cent had signs of valvular heart disease and 21.7 per cent had died of rheumatic infection. An additional 3.5 per cent had died of bacterial endocarditis or another associated infection. The prognosis of acute carditis was most grave and that of chorea most favorable. Children with a diagnosis of potential heart disease at the onset frequently tended to remain free of signs of heart disease. The severity of the rheumatic infection tended to decrease during the period of observation, especially among patients whose primary symptoms were arthritic. The improvement could not be ascribed to racial variation, changes in type of onset, progressive decline in recurrences or a modification in the admission policy of the hospital. It is undetermined whether the intensive supervision of the child from the first manifestation of the disease has had any effect on the natural trend to improvement. The recently adopted conservative attitude toward tonsillectomy has had no unfavorable influence. Transference to a convalescent home, although insuring stabilization of the infection, is no substitute for absolute bed rest for the child with any degree of active infection. Part, if not all, of the improvement would seem to be due to a spontaneous change in the character of the disease. In spite of the seeming decline in severity, rheumatic infection remains the most serious disease which attacks children past infancy.

Arteriosclerotic Aneurysms and Ectasia.—Ruffin and his co-workers were prompted by the death from internal hemorrhage, caused by rupture of the thoracic aorta, of 2 old women with nonsyphilitic thoracic aortic aneurysms to survey the literature and to analyze the postmortem records of the Massachusetts General Hospital. Their first case was one of arteriosclerotic aneurysm and the second one of dissecting aneurysm in an aorta which was the seat of senile ectasia. Of the 9,600 cases in which necropsy was performed at the hospital since 1897 aneurysm was observed in 116; 17 were cases of true dissecting aneurysm with medionecrosis aortae cystica, in 13 cases small "dissections" had occurred mostly in and about small atherosclerotic plaques and of the 86 remaining cases the aneurysms in 21 were in the ascending aorta, in 37 mainly in

the arch, in 8 in the descending thoracic portions and in 20 in the abdominal aorta. Of the 66 cases of thoracic aneurysm, the disorder in 60 was syphilitic and in 3 arteriosclerotic, and in 3 there was considerable dilatation of the ascending aorta without arteriosclerosis—a condition that the authors term "senile ectasia." Of the 20 abdominal aortic aneurysms, 3 were syphilitic and 17 were arteriosclerotic; all of the former and 6 of the latter ruptured. The average age at death of the patients with syphilitic aneurysms was 46.4 years, and of those with arteriosclerotic aneurysms and senile ectasia it was 72.7 years. From the authors' cases it is to be realized that even large thoracic aortic aneurysms may be of an arteriosclerotic or senile nature and that they too may rupture, with fatal hemorrhage. Important clues to the diagnosis of an arteriosclerotic aneurysm and senile ectasia of the thoracic aorta, in some cases at least, are old age, female sex and a negative serologic reaction. The authors conclude that in the future, as a result of a constantly aging population and a gradual reduction of syphilis among the masses, these conditions will be found more often.

Esophageal Electrocardiogram and Myocardial Infarction.—Nyboer studied the standard lead, the selected precordial lead (4) and the selected esophageal lead from the ventricular and auricular levels of 4 normal subjects, of 1 patient with anterior myocardial infarction, of 10 with posterior myocardial infarction and of 10 with a history and/or physical signs suggestive of myocardial disease. The esophageal electrocardiogram from the ventricles was as specifically diagnostic of posterior myocardial infarction as the precordial electrocardiogram is diagnostic of infarction of the anterior wall. The criteria for a diagnosis of posterior myocardial infarction by the esophageal ventricular lead are essentially the same as those for a diagnosis of anterior myocardial infarction by the precordial lead.

Therapy in Angina Pectoris.—Freedberg and his collaborators determined the pharmacodynamic action of drugs on 15 patients with angina pectoris repeatedly mounting and descending a two step stairway. The administration of glyceryl trinitrate, theobromine with sodium acetate or quinidine sulfate enabled some patients to do a measurably greater amount of work under standardized conditions and, at the same time, prevented the changes in the ST segment which result from exercise. Inert drugs had no such effect. Digitalis was given to the patients and in some it increased the frequency of attacks in daily life, decreased the amount of work which could be performed under standardized conditions, increased the electrocardiographic changes following exertion and produced electrocardiographic changes similar to those observed after exercise without medication.

Treatment of Angina Pectoris.—According to Freedberg and his collaborators, the inhaling of octyl nitrite by patients with angina pectoris was effective in preventing attacks on exertion and in shortening the duration of such attacks. Its action is similar to that of glyceryl trinitrate and amyl nitrite. Inhalation of octyl nitrite permits more rapid absorption but makes accurate dosage impossible. The commercial inhalers now available are not satisfactory. Dose for dose, octyl nitrite is much more costly than glyceryl trinitrate but less so than amyl nitrite.

American Journal of Clinical Pathology, Baltimore

11:741-796 (Oct.) 1941

- *Congenital Heart Disease as Cause of Sudden Unexpected Death in Children Under One Year of Age. S. A. Levinson, Chicago.—p. 741.
- Unusual Cardiac Pathology. V. J. Dardinski, Washington, D. C.—p. 754.
- Metastatic Melanoma with Lymphatic Leukemia Blood Picture. B. E. Konwaler, Pueblo, Colo.—p. 761.
- Universal Blood and Hetero Group Transfusions. Anne M. Strauss and S. O. Levinson, Chicago.—p. 766.
- Postvaccinal Meningoencephalomyelitis: Report of Case. T. M. Dunn and R. H. Rigdon, Memphis, Tenn.—p. 771.
- *Factors in Mortality of Appendicitis. F. W. Mulsow, Cedar Rapids, Iowa.—p. 777.
- Relapsing Febrile Nodular Nonsuppurative Panniculitis (Weber-Christians Disease): Report of Case. C. P. Larson and B. N. Ootkin, Tacoma, Wash.—p. 781.

Congenital Heart Disease as Cause of Sudden Death.—According to Levinson, in the Cook County Hospital during the years 1929 through 1939 necropsy was performed on 12,837 infants, children and adults. There were 78 cases, or 0.607 per

cent, of congenital heart disease in children of 1 year or less. In 35 of the 78 cases the disease was diagnosed clinically, whereas in 43 there was no previous history or clinical evidence of congenital disease of the heart or of the blood vessels. Of 1,921 cases in which necropsy was done in the Research and Educational Hospitals from the years 1927 through 1939 there was gross and definite evidence of congenital heart disease in 23. Of 8,500 cases investigated by the author as coroner's physician during the last thirteen years, 50 per cent, or 4,250, were instances of sudden or unexpected death; that is, the persons died without having been previously ill or without having been under a physician's care. In this group there were 8 cases in which children less than 1 year of age had congenital defects of the heart or of the blood vessels directly responsible for the unexpected death. When questioned the parents of the 8 children stated that the children had not been sick at any previous time. Some of the children had been taken to the Infant Welfare Station, and their mothers had not been warned of any evidence of illness.

Factors in Appendicitis Mortality.—Mulsow studied 122 patients who died from appendicitis in Cedar Rapids during the last ten years. He found that the morbid anatomy of the appendix was the most important factor in the death of 41 of the 122. Only 12 of the 41 gave a history of taking laxatives; they were not in the extreme ages of life and they were seen within forty-eight hours by a surgeon. All but 5 were operated on. One of the 5 was treated by Christian science and 2 by chiropractic measures. At the necropsy of these 3 patients, a gangrenous ruptured appendix, with general peritonitis, was observed. The fourth of the 5 patients was a woman of 35 with a badly deformed spine and chest, in whom the diagnosis was uncertain during life, but at necropsy a ruptured appendix, with peritonitis, was observed. The fifth patient, a woman of 46 with rheumatic heart disease, was regarded as a poor surgical risk. Of the one hundred and twenty-two appendixes twenty-five were in the retrocecal position, thirty-nine had concretions in the lumen and one had a diverticulum. Seventeen, or about 13 per cent, of the deaths followed the removal of a noninflamed appendix. Six of the 17 deaths were due to peritonitis, 3 to pneumonia, 2 each to paralytic ileus and embolism and 1 each to anesthesia, septicemia, coronary occlusion and surgical shock. Concretions in the lumen or kinks in the appendix make acute appendicitis a dangerous disease. Concretions were found in three fourths of the perforated appendixes and in half of the gangrenous ones. Fourteen of the patients who died of a ruptured appendix had a history of a previous attack, and because of the previous recovery they delayed in calling a surgeon. Before the age of 15 there were twice as many deaths of girls as of boys, between 15 and 50 twice as many men as women died and after 50 the number of deaths was about equal for the two sexes.

American J. Digestive Diseases, Fort Wayne, Ind.

8:361-400 (Oct.) 1941

- Some Recent Advances in Physiology of Alimentary Tract. A. C. Ivy, Chicago.—p. 361.
 Enterogastrone—Significant Steps in Development of Present Conceptions. J. P. Quigley, Cleveland.—p. 363.
 Present Status of Urogastrone. J. S. Gray, Chicago.—p. 365.
 Gastric Secretory Depressant in Urine. M. H. F. Friedman and D. J. Sandweiss, Detroit.—p. 366.
 *Effect of Urine Extracts on Peptic Ulcer: Experimental and Clinical Study. D. J. Sandweiss, M. H. Sugarman, M. H. F. Friedman, H. C. Saltzstein and A. A. Farberman, Detroit.—p. 371.
 Qualitative Circulatory Deficiencies Observed in Peptic Ulcer: I. Chemical Composition of Blood. Helena E. Riggs, J. G. Reinhold, R. S. Boles and P. S. Shore, Philadelphia, with technical assistance of Charlotte S. Chornock and Florence Meshkov.—p. 383.
 Comparison of Meulengracht and Sippy Therapies in Care of Bleeding Peptic Ulcers. E. S. Emery Jr., Boston.—p. 387.
 Gastroscopic and Histologic Studies of Stomach with Gastric and Extra-gastric Disease During Life and at Autopsy. W. A. Swalm and L. M. Morrison, Philadelphia.—p. 391.

Effect of Urine Extracts on Peptic Ulcer.—Sandweiss and his collaborators point out that from 1 to 5 mg. of extract of pregnancy urine and normal female urine benefited experimental ulcers in Mann-Williamson dogs in the presence of an essentially unaltered gastric acid juice. The beneficial effect was due to the stimulation of fibroblastic and epithelial proliferation and the formation of new blood vessels. Urine con-

tains a gastric secretory depressant. Therapy with the present available extract has shown encouraging results in 63 patients with chronic duodenal ulcer. Treatment did not prevent recurrences. While the number of relapses within six months and one year was approximately the same as obtained in similar patients treated with diet and alkalis, the patients treated with urine extract enjoyed a more liberal diet. While the patients treated with other parenteral products also enjoyed a more liberal diet, fewer of these patients became symptom free during treatment and more of them had relapses within six months and one year as compared with the patients treated with urine extract. It is probable that diet, alkalis and urine extract might produce even better results. In view of the encouraging experimental and clinical results the authors are carrying out further clinical studies with larger doses of a more highly concentrated urine extract.

Annals of Internal Medicine, Lancaster, Pa.

15:629-782 (Oct.) 1941

- Mass Immunization Against Typhus Fever. R. E. Dyer, Bethesda, Md.—p. 629.
 *Cerebral Embolism in Mitral Stenosis. A. W. Harris, Dallas, Texas, and S. A. Levine, Boston.—p. 637.
 Pulmonary Infarction in Heart Disease. L. E. Hines and J. T. Hunt, Chicago.—p. 644.
 Chemistry of Vitamin K. L. F. Fieser, Cambridge, Mass.—p. 648.
 *State of Sensory and Motor Centers in Patients with Hypothyroidism. N. Enzer, E. Simonson and S. S. Blankstein, Milwaukee.—p. 659.
 Concept of Psychosomatic Rheumatism. J. L. Halliday, Glasgow, Scotland.—p. 666.
 Schizophrenia: Neurobiologic Approach. A. O. Hecker, Indianhead Gap, Pa.—p. 678.
 *Plasma Creatinine Determination as Test of Low Grade Kidney Damage. A. Arkin, H. Popper and F. A. Goldberg, Chicago.—p. 700.
 *Hunner Ulcer of Bladder (Review of 100 Cases). C. C. Higgins, Cleveland.—p. 708.
 Roentgen Study of Cavities in Pulmonary Tuberculosis: Cavity Changes Under Collapse and Noncollapse Measures. R. C. Edson and A. L. Starkey, Hopewell, W. Va.—p. 716.
 Idiopathic Cardiac Enlargement Occurring in Infants and Children. J. M. Neely, Lincoln, Neb.—p. 727.

Cerebral Embolism in Mitral Stenosis.—Harris and Levine tried to determine why a sudden cerebral embolism developed in 46 patients with mitral stenosis from the Peter Bent Brigham Hospital and 24 from private practice while they were in a fair state of cardiac compensation. Auricular fibrillation was present in 55 patients, and in only 3 of them was it transient. The average duration of the fibrillation was twenty-two months; the range was from three days to nine years. It appears that the cerebral accident is apt to occur during the early weeks or months after the onset of persistent auricular fibrillation. In 5 patients, after the fibrillating state reverted to a normal rhythm either spontaneously or after quinidine therapy embolism took place within a few hours or a day or two. In 17 with regular rhythm at the time of the cerebral accident fibrillation of the auricles, as far as could be ascertained, had not been present previously. The "immediate mortality" (24 deaths) and the survival period of those recovering from embolism were not influenced by auricular fibrillation, despite the fact that hypertension and congestive failure were more common in this group. There were 23 with and 49 without congestive heart failure; the "immediate mortality" for the former was 53 per cent, and for the latter it was 24 per cent. The 4 patients with congestive failure with regular rhythm died "immediately," while only 4 of 13 with regular rhythm but without failure died "immediately." It seems that cerebral embolism is more likely to occur in patients with mitral stenosis having little objective evidence of congestive heart failure than it is in those with advanced failure who are bedridden. It occurs more frequently in compensated than in decompensated mitral stenosis because the former state lasts longer.

Sensory and Motor Centers in Hypothyroidism.—Enzer and his associates determined the state of the sensory and motor centers of 13 patients with a decreased metabolic rate and hypothyroidism by the fusion frequency of flicker and finger movements. The sensory and the motor centers were deteriorated in these patients. In some patients the decrease of fusion frequency and in others the decrease of motor frequency was more pronounced. Eleven of 13 patients had values of fusion frequency lower than the lowest value of 45 normal control subjects; the other 2 had values that coincided with the lowest normal values. This explains the disposition to increased fatigability of such

patients, as the fusion frequency of flicker is diminished in nervous fatigue. Weakness of motor centers is shown by the decrease of frequency during performance.

Plasma Creatinine Determination.—According to Arkin and his colleagues, their new simple determination of plasma creatinine provides a diagnostic procedure for detecting mild disturbances of glomerular filtration and, consequently, of renal damage of low grade. These disturbances are of diagnostic and prognostic importance in acute nephritis, chronic nephritis, nephrosis, nephrosclerosis, urologic conditions and heart failure. In extrarenal azotemia the increase of the creatinine level is relatively less substantial than that of urea and nonprotein nitrogen, apparently because of an increased reabsorption of urea. The reagents are a saturated solution of picric acid and 10 per cent chemically pure sodium hydroxide. To 12 cc. of picric acid 4 cc. of oxalated plasma is added, drop by drop. The test tube is shaken and immersed in a boiling water bath for fifteen seconds. The mixture is filtered through a no. 44 Whatman filter. To 10 cc. of the cooled filtrate 0.5 cc. of sodium hydroxide is added and the mixture is again filtered. The colored solution formed is read with monochromatic light with a filter of 530 millimicrons twenty minutes after the sodium hydroxide has been added. The determination is made with a colorimeter, a photometer or a photoelectric colorimeter. By the aid of a known creatinine solution a comparison curve is made in the range between 0.5 and 3 mg. per hundred cubic centimeters of plasma. If the creatinine concentration exceeds this range the plasma is diluted with water. The normal level lies between 0.6 and 0.95 mg. per hundred cubic centimeters of plasma. It is constant in normal persons on different days or at different times of the day, even after the ingestion of food or fluid. Any slight increase over 1 mg. per hundred cubic centimeters is a probable sign of disturbed glomerular filtration. The method has been used four hundred and seventy-four times for 278 patients with renal disturbances or diseases commonly associated with extrarenal azotemia.

Hunner Ulcer of Bladder.—Higgins employed various types of therapy for his 100 patients with Hunner ulcer, but he observed that conservative treatment, fulguration of the ulcer and overdistention of the bladder, is the best method. Foci of infection must be eradicated. Of 69 patients receiving such treatment 17 were definitely cured, 10 were lost track of, 14 were not improved and 28 were improved. Four patients also had other operative procedures; 1 of them was cured and 1 was improved.

Archives of Ophthalmology, Chicago

26:727-944 (Nov.) 1941

- Random Reminiscences of Last Century European Ophthalmologists. A. W. Stirling, Baldwin, Ga.—p. 727.
Change of Axis of Astigmatism on Accommodation. W. L. Hughes, Hempstead, N. Y.—p. 742.
Retinal Periphlebitis in Course of Acute Exudative Choroiditis. A. Knapp, New York.—p. 750.
*Lime Burns of Eye: Use of Rabbit Peritoneum to Prevent Severe Delayed Effects: Experimental Studies and Report of Case. A. L. Brown, Cincinnati.—p. 754.
Hydrogel Qualities of Vitreous. L. von Sallmann, New York.—p. 770.
Tumors of Conjunctiva and Lids: Brief Review. B. Samuels, New York.—p. 789.
*Causes of Blindness in Pennsylvania: Analysis of Blindness in Over 30,000 Eyes. A. Cowan and Bernice C. English, Philadelphia.—p. 797.
Modification of Brewster Stereoscope for Clinical Requirements. E. Krimsky, Brooklyn.—p. 808.
Ocular Conditions Associated with Coliform Bacteria: Clinical and Experimental Observations on Coliform Bacteria Infections of Upper Respiratory Tract. C. Berens and Edith L. Nilson, New York.—p. 816.
Retinal Phlebosclerosis. G. G. Gibson and L. W. Smith, Philadelphia.—p. 840.
Ophthalmic Zinc Sulfate Solutions: Buffered, Isotonic and Preserved. L. Arrigoni, L. Fischer, Seattle, and G. A. Tozer, Everett, Wash.—p. 852.
Tonometric Standardization: Method of Increasing Accuracy of Tonometry. D. O. Harrington and A. H. Parsons, San Francisco.—p. 859.
Ophthalmic Aspects of Acute Oxygen Deficiency. R. A. McFarland, Boston; J. N. Evans, Brooklyn, and M. H. Halperin, Boston.—p. 886.

Lime Burns of Eye.—Since the prognosis of severe burns of the eye treated conservatively (by irrigation and with atropine and ointment) has been bad, Brown used several membranes in experiments on rabbits to prevent the burned palpebral conjunctiva from being in constant contact with the corneal surface, which he found acted as a corrosive agent. He found rabbit peritoneum to be the tissue of choice. He cites 4 patients who

sustained lime burns of the eye and in whom he used rabbit peritoneum to protect the surfaces of the eye from coming in contact with the burned palpebral conjunctiva. Affected surfaces must be completely separated by smooth tissue to allow healing. A section of peritoneum about 4.5 by 10 cm., passed through three successive washes of warm physiologic solution of sodium chloride, is used. The needles of two double armed no. 5 silk sutures are passed through the center area of the tissue about 2.5 cm. apart. The needles are then passed through the upper fornix, the tissue is placed as far as possible into the upper fornix and the sutures are then tied over buttons to prevent their cutting through the skin. The tissue is smoothed out over the eye and similarly sutured in the lower fornix. Any medication or irrigation may be applied beneath either surface of the flap. The flap is removed when the cornea is healed and the palpebral conjunctiva seems quiet, that is in about two weeks. If no reaction or infection is manifest it is best to leave the flap for three weeks or longer. The flap may be replaced whenever it becomes macerated or shredded.

Causes of Blindness in Pennsylvania.—Cowan and English state that since 1934, when an act granting pensions to blind persons in Pennsylvania was enacted, the causes for the blindness of 15,676 persons or 31,352 eyes have been tabulated. Persons 21 or older with a visual acuity of 20/200 (6/60) or less were considered industrially blind. This is the definition of blindness adopted by the Committee on Statistics of the Blind. The outstanding causes in the order of frequency were senile cataract, uveitis, glaucoma, trauma, congenital anomalies and neonatal ophthalmia. Since May 1939, when therapeutic procedures have been recommended the vision of 11.1 per cent of the persons with whom contact was established has been restored or improved. This has resulted in a substantial saving to the commonwealth in the payment of pensions.

Archives of Surgery, Chicago

43:735-932 (Nov.) 1941

- *Treatment of Hypoproteinemia by Oral Administration of Protein Hydrolysate. C. A. Beling and R. E. Lee, Newark, N. J.—p. 735.
Regional Lymphatic Metastases of Carcinoma of Stomach. F. A. Collier, E. B. Kay and R. S. McIntyre, Ann Arbor, Mich.—p. 748.
Acute Cholecystitis. R. H. Wallace and A. W. Allen, Boston.—p. 762.
Alimentary Azotemia and Bleeding Peptic Ulcer Syndrome. C. F. Chunn, H. N. Harkins and R. T. Boals, Detroit.—p. 773.
Hydatid Disease (Hydatidosis): Hydatid Cyst of Lung. J. Arce, Buenos Aires, Argentina.—p. 789.
*Carcinoma of Upper Extremity. D. A. Campbell, Ann Arbor, Mich.—p. 803.
Intestinal Obstruction. J. K. Donaldson, E. B. Sive and N. Lewis, Little Rock, Ark.—p. 811.
Hodgkin's Disease: Review of Fifty-Four Cases. R. E. Burger and E. P. Lehman, Charlottesville, Va.—p. 839.
*Preoperative Management of Gastrojejunocolic Fistula. H. K. Gray and W. S. Sharpe, Rochester, Minn.—p. 850.
Congenital Duodenal Obstruction. C. S. White and J. L. Collins, Washington, D. C.—p. 858.

Protein Hydrolysate for Hypoproteinemia.—Beling and Lee point out that the feeding of a hydrolysate of proteins from beef, milk and wheat to 30 patients with hypoproteinemia satisfactorily replaced proteins in the plasma and corrected the various anomalies which accompanied the hypoproteinemia. Replacement was rapid but was not fast enough for the treatment of shock and immediate hypoproteinemia. The hydrolysate is valuable as an adjunct to intravenously administered plasma. Its preoperative and postoperative use is important in correcting hypoproteinemia before and in preventing its occurrence after gastrointestinal surgical procedures.

Carcinoma of Upper Extremity.—Campbell believes that carcinomas of the upper extremity, although not frequent, are too often underrated, overlooked or undertreated. A good prognosis is to be expected only if early treatment is vigorous. Among the 36 cases patients with the disease observed at the hospital of the University of Michigan 32 were men and 4 were women. At the initial examination, 44.4 per cent of the patients had palpable epitrochlear or axillary nodes or both, and 50 per cent suffered a recurrence or ultimately died of the carcinoma. Only 4 patients have lived five years or more without a recurrence. However, many of the patients died of intercurrent disease, without evidence of recurrence, before the five year limit was reached. In 18 patients proved unrelated cutaneous

neoplasms were present; fourteen were on the face and four on other extremities. Thirty-four of the carcinomas were of the squamous cell type, one was mediocellular and one was an adenocarcinoma of sweat gland origin. Operation and roentgen or radium irradiation remain the most popular procedures in the treatment of the local lesions and the involved lymph nodes. Although 15 of the 36 patients died, 7 died from causes attributed to the carcinoma and 8 from intercurrent disease. The average age of those dying from cancer was 52.7 years, and of those dying from intercurrent disease it was 75 years.

Gastrojejunocolic Fistula.—From a study of the 49 patients with gastrojejunocolic fistula operated on at the Mayo Clinic from 1930 to 1939 Gray and Sharpe conclude that the prohibitive mortality rate following one stage reparative procedures can be lowered materially by adequate preoperative management. Eighteen of the 49 patients died; of 13 receiving no preoperative preparation 8 died, and of 36 given fairly satisfactory preparation 10 died. However, only 1 of 7 having careful and adequate preoperative attention died.

Arkansas Medical Society Journal, Fort Smith

38:115-138 (Nov.) 1941

Regional Enteritis: Report of Case—Summary. J. B. Jameson, Camden.—p. 115.
Present Status of Sulfonamide Therapy. J. N. Compton, Little Rock.—p. 117.

Bulletin of Johns Hopkins Hospital, Baltimore

69:297-396 (Oct.) 1941

- *Studies on Sulfadiazine: I. Chemotherapy of Experimental Hemolytic Streptococci, Pneumococci and Staphylococci Infections in Mice. P. H. Long, Eleanor A. Bliss and E. Ott, Baltimore.—p. 297.
- *Id.: II. Clinical Use of Sulfadiazine in Therapy of Bacterial Infections, Other Than Pneumonia. G. I. Trevett, R. A. Nelson and P. H. Long, Baltimore.—p. 303.
- *Id.: III. Use of Sulfadiazine in Treatment of Pneumococci Pneumonia. F. T. Billings Jr. and W. B. Wood Jr., Baltimore.—p. 314.
- Experimental Shock: I. Effects of Acute Hemorrhage in Healthy Dogs. P. B. Price, C. R. Hanlon, W. P. Longmire and W. Metcalf, Baltimore.—p. 327.
- Results of Artificial Pneumothorax Therapy in Pulmonary Tuberculosis. H. G. Whitehead, Baltimore.—p. 363.

Studies on Sulfadiazine.—Long and his colleagues after finding sulfadiazine effective in controlling experimental pneumococci, staphylococci and hemolytic streptococci infections used it clinically for 230 patients with bacterial infections, including 105 with pneumonia. As relatively high concentrations of sulfadiazine can be maintained in the blood without frequent toxic reactions, the therapeutic result is better with this drug than it is with other sulfanilamide derivatives. For the mild or moderately severe hemolytic streptococci infections (tonsillitis, erysipelas, otitis media, mild scarlet fever and the like) the authors prefer oral therapy. They base the initial dose on 0.05 Gm. per kilogram of body weight. Two of 3 patients ill with meningococci meningitis responded favorably to the drug, while the other died within one hour after therapy was started. Of 6 patients with subacute bacterial endocarditis, 1 has made a dramatic response to therapy and the other 5 were not materially improved by chemotherapy. Five of the 12 patients with various types of staphylococci infections (osteomyelitis) who were given sufficient doses of the drug to maintain a level in the blood of 5 to 7 mg. made a gratifying response to therapy, and all continued to take the drug for at least four months. From July 1940 to June 1941 105 adults with pneumonia have been treated with sulfadiazine alone or with sulfadiazine and type specific antipneumococcus serum. Of the 75 patients who received only sulfadiazine 56 had pneumonia due to pneumococci of types I to VIII, 7 had bacteremia, 8 had complications associated with the pneumonia and 14 had a major concurrent disease. Only 1 patient died, nine hours after entering the hospital. The response to sulfadiazine therapy was usually prompt, but it did depend, at least in part, on the concentration of sulfadiazine in the blood during the first twelve to twenty-four hours of treatment. Of the 30 patients with pneumococci pneumonia treated with sulfadiazine and antipneumococcus serum 16 had positive blood cultures and 18 had major concurrent diseases. Seven patients died, of whom 6 had major concurrent diseases and 4 were in shock when admitted to the hospital. Only 17 of the 230 patients treated experienced toxic reactions.

Canadian Medical Association Journal, Montreal

45:295-384 (Oct.) 1941

- *Treatment of Angina Pectoris of Atheromatous Origin by Ligation of Great Cardiac Vein. M. Fauteux and J. H. Palmer, Montreal.—p. 295.
- Surgical Management of Gastric and Duodenal Ulcers. P. H. T. Thorlakson and A. W. S. Hay, Winnipeg, Man.—p. 298.
- Prevention, Control and Treatment of Human Cancer as Deficiency Disease: Preliminary Report. J. R. Davidson, Winnipeg, Man.—p. 308.
- Radiologic Study of Mastoids in Children. L. A. Gagnier Jr., Montreal.—p. 312.
- Granulomatous Lymphadenitis Caused by Filariae. Miriam A. Brick and W. L. Donohue, Toronto.—p. 315.
- *New Immunization Program in Royal Canadian Air Force. A. H. Sellers, Toronto.—p. 318.
- Prognosis in Bilateral Renal Tuberculosis. W. F. Braasch and E. B. Sutton, Rochester, Minn.—p. 320.
- Clinical Studies in Immunity to Pertussis with Use of Pertussis Skin Testing Toxin and Antiendotoxin. L. P. Stearn, Montreal; D. Lapointe and E. Dechene, Quebec.—p. 326.
- *Anuria: Report of Three Types of Cases. J. C. McClelland, Toronto.—p. 332.
- Nail Polish Dermatitis. J. F. Burgess, Montreal.—p. 336.
- Pain of Cancer from Neurosurgeon's Viewpoint. F. Turnbull, Vancouver, B. C.—p. 339.
- Interstitial Cystitis. E. Smith and F. D. Conroy, Montreal.—p. 342.
- Serious Injury to Rectum from Improperly Administered Enemas. H. C. Ballon and A. Goldbloom, Montreal.—p. 345.

Ligation of Great Cardiac Vein for Angina Pectoris.—Their experimental observations on dogs suggested to Fauteux and Palmer that venous ligation would be of considerable value in the treatment of advanced coronary disease in man. Consequently, on April 19, 1939, they operated on a patient with severe angina of effort. More than two years have elapsed since the operation, and the patient has been entirely free from pain. This relief the authors believe is due to an improvement in the coronary circulation rather than to any interruption of nervous pathways or danger signals. It is their opinion that at least for the present only patients with severe angina pectoris who have not responded to medical treatment should be operated on. In other words, until further experience is gained venous ligation should be reserved for angina pectoris of atheromatous origin rather than for coronary disease as such.

Immunization of Canadian Air Force.—Sellers states that outbreaks of diphtheria and scarlet fever among the air force personnel during the winter and spring of 1940-1941 caused procedures promising effective future control to be introduced. The program calls for Schick and Dick testing and subsequent immunization of all air force personnel throughout Canada and Newfoundland during the training period, before proceeding overseas where these diseases are more prevalent. By this procedure it can be expected that diphtheria will be almost completely eliminated from the air force personnel. For scarlet fever the ground is not so certain, but immunization is the best available weapon. All personnel either in or entering the service are Schick and Dick tested. The result of the Schick test is read in twenty-four or forty-eight hours, and if negative it is read again in five or seven days. All personnel with positive Schick reactions (on the first or the second reading) are given subcutaneously two 1 cc. doses, four weeks apart, of alum precipitated diphtheria toxoid. Schick-sensitive persons are not given toxoid. The Dick reaction is read in twenty-two or twenty-four hours, and all those showing a positive one are given five 1 cc. injections of scarlet fever toxin subcutaneously at weekly intervals in graded doses. Special clinics with trained personnel have been set up at large stations of initial entry. Permanent records of all tests and inoculations are made, and when immunization is complete the records are sent to air force headquarters to be used for statistical purposes.

Anuria.—McClelland discusses three types of anuria from sulfapyridine, from calculi on both sides and from crush injury in mines. Treatment must be directed at the cause. An obstructing calculus must be removed. If both ureters are blocked it is sufficient to remove the stone or stones from one side and to treat the other side expectantly. The one well functioning kidney is sufficient to sustain life and to bring the nitrogen content of the blood down to normal, and the obstruction of the other side can be treated when the patient's condition is improved. Hence it is the author's belief that unilateral anuria must occur more frequently than it is realized. The

shutting off of one kidney is evidently not important as long as the function of the other kidney is good. Ureteral obstruction due to sulfapyridine crystals can be overcome by the passage of ureteral catheters. Surgical intervention is indicated only if ureteral catheterization fails. There is no specific treatment for crush injuries. The intravenous administration of saline and dextrose solutions or dextrose in distilled water is useful. The dextrose should be made up in distilled water if the patient's nonprotein nitrogen level is more than 100 mg. Aminophyllin and caffeine with sodium benzoate should be used.

Endocrinology, Springfield, Ill.

29:483-654 (Oct.) 1941. Partial Index

- Reaction of Human Chorionic and Equine Gonadotropins to Formaldehyde. F. Bischoff, Santa Barbara, Calif.—p. 520.
Selective Neutralization of Follicle Stimulating Action of Gonadotropic Preparations by Antigonadotropic Serums. H. S. Kupperman, R. K. Meyer and W. H. McShan, Madison, Wis.—p. 525.
Specificity of Pregnancy Urine Antiprolan with Respect to Human Gonadotropic Hormones from Various Sources. B. Zondek, F. Sulman and J. Sklow, Jerusalem, Palestine.—p. 531.
Desoxycorticosterone Acetate Requirement of Adrenalectomized Dog. R. A. Cleghorn, J. L. A. Fowler, J. S. Wenzel and A. P. W. Clarke, Toronto, Canada.—p. 535.
Attenuation of Insulin by Adsorption. J. M. Johlin.—p. 574.
Effect of Glycolysis Inhibitors and of Certain Substrates on Metabolism and Motility of Human Spermatozoa. J. MacLeod, New York.—p. 583.
Comparative Action of Stilbestrol and Other Estrogens on Endometrium of Castrated Guinea Pig. A. Lipschütz and L. Vargas Jr., Santiago, Chile.—p. 622.
Inhibition of Copper Induced Ovulation in Rabbit by Progesterone. M. H. Friedman, Beltsville, Md.—p. 628.
Action of Progesterone on Genital Organs of Unprimed Rhesus Monkey. C. G. Hartman and H. Speert, Baltimore.—p. 639.

Florida Medical Association Journal, Jacksonville

28:149-196 (Oct.) 1941

- Labor in Abnormal Presentations. R. G. Nelson, Tampa.—p. 159.
Role of the Delivery Home in Treating the Low Income Group. J. M. Hoffman, Pensacola.—p. 162.
Toxemia of Pregnancy. S. R. Norris, Jacksonville.—p. 164.
Management of Primary Glaucoma. H. J. Blackmon, Tampa.—p. 169.
Practicing Physician's Place in Public Health. W. H. Pickett, Jacksonville.—p. 173.
Labor and the Industrial Surgeon. L. F. Carlton, Tampa.—p. 175.
Coordinating the School and Health Program. A. L. Stebbins, Pensacola.—p. 176.

Journal of Bone and Joint Surgery, Boston

23:753-1024 (Oct.) 1941. Partial Index

- Aseptic Necrosis of Femoral Head Following Traumatic Dislocation of Hip: Report of Nine Cases. S. W. Banks, Chicago.—p. 753.
Significance of Phlebotrombosis and Thrombophlebitis in Orthopedic Surgery. A. Ochsner and M. DeBakey, New Orleans.—p. 788.
Simple Method of Ambulatory Treatment of Fractures of Clavicle. M. G. Kini, Vizagapatam, South India.—p. 795.
Bone Tuberculosis in Northern Newfoundland. C. S. Curtis and E. G. Loomis, St. Anthony, Newfoundland.—p. 811.
Retrolunar Dislocation of Capitate with Fracture or Subluxation of Navicular Bone. E. F. Cave, Boston.—p. 830.
Conservative and Operative Treatment of Fractures of Carpal Scaphoid (Navicular). R. Soto-Hall and K. O. Haldeman, San Francisco.—p. 841.
Evaluation of Physiotherapy in Early Treatment of Anterior Poliomyelitis. H. R. McCarroll and C. H. Crego Jr., St. Louis.—p. 851.
*Gradation of Ewing's Tumor (Endothelial Myeloma). W. C. Campbell and J. F. Hamilton, Memphis, Tenn.—p. 869.
Scoliosis Complicated by Spinal Cord Involvement. C. W. Ruhlin, Bangor, Maine, and S. Albert, Iowa City.—p. 877.
*Fractures of Tibia in Adults. S. S. Hudack, New York.—p. 896.
Review of 201 Cases of Suppurative Arthritis. J. A. Heberling, Pittsburgh.—p. 917.
Carpal Boss: Commonly Overlooked Deformity of Carpus. R. M. Carter, Green Bay, Wis.—p. 935.
Roentgenographic Recognition of Synovium. A. P. Aitken, Boston.—p. 950.
*Conservative Treatment of Serratus Palsy. J. Wolf, Davenport, Iowa.—p. 959.

Gradation of Ewing's Tumor.—In studying the cellular activity of thirty Ewing tumors Campbell and Hamilton tried to divide them into grades, according to the number of mitotic figures observed in a high power field: grade 1, one to five figures; grade 2, six to ten figures, and grade 3, eleven to fifteen figures. It appears to the authors that a patient with a tumor having five or less mitotic figures has approximately a 23 per cent chance to survive ten years and a 31 per cent chance to live five years, whereas if the count is eleven or more he will

probably not live for much longer than one year. None of the authors' patients with grade 2 tumors lived ten years, but 3, or 33 per cent, lived more than five years. Roentgenograms of the thirty tumors indicate that the early stage of the tumor, characterized by osseous condensation, is concomitant with increased cellular activity, whereas late osseous changes are usually accompanied by diminished cellular activity. Studies of large numbers of cases might throw more light on the subject and lead to the discovery of a method of establishing a more accurate prognosis.

Fractures of Tibia in Adults.—Hudack compared the operative and nonoperative treatment of eighty-two tibial fractures in adults treated from 1929 to 1938. He found that operative treatment gave assurance of a surer course and better results than did nonoperative treatment.

Conservative Treatment of Serratus Palsy.—Wolf describes a brace for patients with permanent paralysis of the serratus muscle that allows complete use of the arm, presses the winged scapula in its normal position against the wall of the chest and prevents scapular rotation.

Journal of Clin. Endocrinology, Springfield, Ill.

1:711-788 (Sept.) 1941

- Acute Atrophy of Bone (Osteoporosis) Simulating Hyperparathyroidism. F. Albright, C. H. Burnett, O. Cope and W. Parson, Boston.—p. 711.
Linear Growth and Epiphyseal Closure: Effect of Treatment with Chorionic Gonadotropic Substance—Report of Twenty-Three Cases. L. A. Lurie and J. Hertzman, Cincinnati.—p. 717.
Von Recklinghausen's Disease with Diabetes Mellitus. S. R. Halpern and Gladys J. Fashena, Dallas, Texas.—p. 726.
Effect of Various Gonadotropins on Spermatogenesis and Urinary Androgens in the Human. E. P. McCullagh and E. J. Ryan, Cleveland.—p. 728.
Endocrine Therapy of Functional Menometrorrhagia and Ovarian Sterility: III. Cyclic Administration of Equine Gonadotropin. E. C. Hamblen, W. K. Cuyler, J. A. Wilson and R. L. Pullen, Durham, N. C.—p. 742.
Id.: IV. One-Two Cyclic Therapy with Equine and Chorionic Gonadotropins. E. C. Hamblen, W. K. Cuyler, J. A. Wilson and R. L. Pullen, Durham, N. C.—p. 749.
Use of Estrogenic Vaginal Suppositories in Vaginitis in Women. L. Neugarten and E. Steinitz, New York.—p. 754.
Suitable Dosage of Stilbestrol for Suppression of Lactation. J. Clahr, Bronx, N. Y.—p. 759.
Urinary Excretion of 17-Ketosteroids in Ovarian Failure: Parts I to IV. E. C. Hamblen, W. K. Cuyler and Margaret Baptist, Durham, N. C.—p. 763.
Increased Excretion of Gonadotropic Hormone in Pregnant Woman with Mammary Carcinoma. B. Zondek, Jerusalem, Palestine.—p. 782.
Correlation of Fetal Adrenal Glands with Edema and Toxemia of Late Pregnancy. T. J. Parks, New York.—p. 784.

1:789-858 (Oct.) 1941

- Studies on Convulsive Mechanism in Idiopathic Hypoparathyroidism. I. McQuarrie, A. E. Hansen and M. R. Ziegler, Minneapolis.—p. 789.
Sterol Balance in Hypothyroidism. W. Fleischmann and L. Wilkins, with technical assistance of E. Smetana, Baltimore.—p. 799.
Clinical Applications of Studies in Experimentally Induced Exophthalmos of Anterior Pituitary Origin. H. B. Friedgood, Boston.—p. 804.
Gonadotropic Hormone: Urine Assays During Menstrual Cycle in Normal Women. Emily J. Heller, Madison, Wis.—p. 813.
*Relation of Dose and Type of Estrogen to Nausea and Vomiting. R. R. Greene and E. M. Dorr, Chicago.—p. 821.
Effect of Desoxycorticosterone Acetate on Glucose Tolerance in Normal Individuals and in Patients with Addison's Disease. T. H. McGavack, G. P. Charlton and S. Klotz, New York.—p. 824.
Intensive Carbohydrate Therapy in Diabetic Patients with Manifest or Suspected Liver Disease. C. D. Strouse, E. E. Rosenbaum, R. C. Levy and S. Soskin, Chicago.—p. 831.
Thyroid Globulin in Treatment of Menstrual Irregularities. Ruth C. Foster and M. A. Foster, Madison, Wis.—p. 836.
*Treatment of Recurrent and Threatened Abortion: Report of 226 Cases. J. Kotz, Elizabeth Parker and M. S. Kaufman, Washington, D. C.—p. 838.

Relation of Estrogen to Nausea and Vomiting.—Greene and Dorr present evidence that there is a definite relationship between the amount of diethylstilbestrol administered and the incidence of nausea and vomiting. They gave 283 women in the menopause diethylstilbestrol and related stilbene derivatives orally or parenterally. Reactions were more frequent with larger doses. The incidence of reactions was high with diethylstilbestrol, which is relatively rapidly absorbed from the site of injection. Reactions were less frequent with stilbestrol dipropionate, which is relatively slowly absorbed. Giving diethylstilbestrol orally should control menopausal symptoms and should

not cause reactions if excessive amounts are avoided. If treatment is started with a daily 0.1 mg. dose, increased after one or two weeks to 0.2 mg. and then after each succeeding one or two weeks raised to 0.5, 1, 1.5 and 2 mg. until symptomatic improvement is obtained and maintained, reactions will be reduced to a minimum. Only 22.5 per cent of the authors' patients needed doses larger than 0.5 mg. None of their patients had undesirable side reactions.

Progesterone for Threatened Abortion.—Kotz and his associates used progesterone for the treatment of 181 of 226 women whose pregnancy appeared to be threatened. Forty-two women received progesterone prophylactically (36 gave a history of one or more previous unsuccessful pregnancies, and 6 had been treated for primary sterility). The bleeding of the 45 patients who received no progesterone was slight and its duration so short that treatment did not seem warranted, or the patients were seen so late that treatment was considered useless. Of the 6 patients with primary sterility, 1 bled during pregnancy but went to near term and gave birth to a viable premature infant, and the other 5 had normal full term infants with no evidence of abnormality. The 36 patients had had a total of seventy-two pregnancies terminating in the birth of 8 full term infants. Under treatment, 28 carried through to term without bleeding, 3 had some bleeding and 5 aborted. The 3 patients with some bleeding went into labor and were delivered of viable infants two or more weeks prior to the expected date of confinement. Of 184 women who bled during the first eight months of gestation 139 were given progesterone; 102 of them were delivered of viable infants, while 82 aborted. The infants of 16 of the 102 patients who gave birth to viable babies were two or more weeks premature. Among the 184 women 91, or 49.4 per cent, had their first or only episode of bleeding in the second month of pregnancy, and of these 42, or 46.1 per cent, aborted. In the third month there were 56, or 30.4 per cent, and of these 31, or 55.3 per cent, aborted. The authors suggest that probably many abortions that physicians do not know about occur in the first month of pregnancy, as the women do not come for medical care. They believe their data demonstrate that if progesterone is to be given prophylactically its administration should be started early, certainly in the first month, and continued at least through the third month; the dose should be increased and other precautionary measures taken at the expected time of the second, third and fourth missed menstrual periods. The danger of abortion does not disappear after the third month even though the placenta takes over the production of progesterone. The hormone imbalance persists in a few women, and the continued use of progesterone benefits these women. Patients with sterility, women who habitually abort and those who have bled during the pregnancy should have prophylactic treatment continued at least until the end of the fifth month and preferably to term. There are at least three factors, probably interactive, which may cause abortions: defective germ plasm, endocrine deficiencies and nutritional deficiencies. No amount of therapy will affect the first cause, but the second and third causes may be amenable to treatment. The problem is to recognize them and to treat patients with these deficiencies adequately.

Journal of Immunology, Baltimore

42:1-108 (Sept.) 1941

- Immunologic Relationship Between Spotted Fever and Exanthematic Typhus. M. Ruiz Castaneda and R. Silva, Mexico City, Mexico.—p. 1.
- Cross Protection Between Heterologous Agglutinogenic Types of Beta Hemolytic Streptococci. Alice C. Evans, Washington, D. C.—p. 15.
- Blood Constituents During Anaphylactic Shock in Monkey. L. W. Kinsell, L. M. Kopeloff, R. L. Zwerner and N. Kopeloff, New York.—p. 35.
- Use of Chick Embryo Tissues and Fluid as Antigens in Complement Fixation Reaction in Influenza. Clara Nigg, J. H. Crowley and Doris E. Wilson, Minneapolis.—p. 51.
- Occurrence of Forssman Heterogeneous Antigen in Nematode *Trichinella Spiralis*. Evelyn Abrams Mauss, Baltimore.—p. 71.
- Relationship Between Constant-Antiserum and Constant-Antigen Optimal Ratios Obtained with Rat and Guinea Pig Precipitin. Charlotte A. Colwell and G. P. Youmans, Chicago.—p. 79.
- Serologic and Biochemical Study of Hemolytic Streptococci. Helen Plummer, Toronto, Canada.—p. 91.

Journal of Investigative Dermatology, Baltimore

4:259-330 (Aug.) 1941

- Statistical Analysis of Spore Size in Genus *Microsporium*. N. F. Conant, Durham, N. C.—p. 265.
- Technic for Measuring Oxidation-Reduction Potential of Skin and Other Surfaces. Rita M. Kelley and J. W. Williams, Cambridge, Mass.—p. 279.
- Inherited Dystrophy of Hair and Nails. T. Benedek, Chicago.—p. 285.
- Studies in Adhesive Tape Irritation. J. M. Sheldon, Hilda M. Hensel and F. Blumenthal, Ann Arbor, Mich.—p. 295.
- Relationship Between Acid-Base Equilibrium and Endogenous Bacterial Flora of Skin. Frances Creekmur Whitcomb and L. Arnold, Chicago.—p. 317.
- Effect of Monobenzyl Hydroquinone on Oxidase Systems in Vivo and in Vitro. S. M. Peck and H. Sobotka, New York.—p. 325.

4:331-430 (Oct.) 1941

- Mitoses Occurring in Acanthosis Produced by Hormones. E. Uehlinger, W. Jadassohn, Zurich, Switzerland, and H. E. Fierz, St. Gall, Switzerland.—p. 331.
- Poison Ivy Plant and Its Oleoresin. B. Shelmire, Dallas, Texas.—p. 337.
- Artificial Blister in Study of Eosinophils, with Particular Reference to Dermatitis Herpetiformis. M. H. Goodman, Baltimore.—p. 349.
- Epithelioma Attributable to Arsenic. H. Montgomery, Rochester, Minn., and M. Waisman, Chicago.—p. 365.
- Vitamin Deficiency Syndrome in Albino Rat Precipitated by Chronic Zinc Chloride Poisoning. P. Gross, Z. Harvalik and Edith Runne, New York.—p. 385.
- Investigations Concerning Actual Methods Employed in Management of Common Dermatoses: Practical Management of Psoriasis. S. Ayres Jr., Los Angeles; S. W. Becker, Chicago; L. Chargin, New York; T. Cornbleet, Chicago; E. C. Fox, Dallas, Texas; J. F. Madden, St. Paul, and P. A. O'Leary, Rochester, Minn.—p. 399.

Journal of Pharmacology & Exper. Therap., Baltimore

73:119-228 (Oct.) 1941. Partial Index

- Potentiation of Acetylcholine by Alcohol and Ether. G. H. Ettinger, A. B. Brown and A. H. McGill, Kingston, Ont., Canada.—p. 119.
- Studies Concerning Anesthetic Action of Steroid Hormones. H. Selye, Montreal, Canada.—p. 127.
- Effect of Sodium Amytal on Emptying Time of Normal Human Stomach. E. J. Van Liere and D. W. Northrup, Morgantown, W. Va.—p. 142.
- Effect of Atabrine on Experimental Cysticercosis of Mice. J. T. Culbertson and Sylvia H. Greenfield, New York.—p. 159.
- Depression of Experimental Polycythemia by Various Substances in Dogs, Rabbits and Man. J. E. Davis, Burlington, Vt.—p. 162.
- Studies on Acute Toxicity of Sulfacetamide (Para-Aminobenzene Sulfon)l Acetyl Imide). R. Donovick and E. Henderson.—p. 170.
- Therapeutic Effect of Sulfacetamide in Experimental Infections Due to *Escherichia Coli*. R. Donovick and E. Henderson.—p. 173.
- Relative Activity of Digitalis Preparations in Frog, Cat and Man, and Its Bearing on Problem of Bioassay and So-Called Deterioration. H. Gold, M. Cattell, N. T. Kwit and M. Kramer.—p. 212.

Kansas Medical Society Journal, Topeka

42:413-456 (Oct.) 1941

- Office Treatment of Anorectal Diseases and Its Limitations. L. J. Hirschman, Detroit.—p. 413.
- Diagnosis and Treatment of Early Congestive Heart Failure. C. W. Erickson, Pittsburg.—p. 418.
- Study of Leukorrhea in General Practice. C. W. Haines, Haven.—p. 422.
- Sodium Hypochlorite Dermatitis. M. Bernreiter, Kansas City.—p. 424.
- Intravenous Anesthesia. H. R. Schmidt, Newton.—p. 425.
- Relapsing Fever. H. O. Closson, Ashland.—p. 427.
- Systemic Action of Drugs Placed on Intact Skin. P. W. Miles, Newton.—p. 430.
- Cholecystography in Presence of Jaundice. M. H. Delp, Kansas City.—p. 434.

Laryngoscope, St. Louis

51:903-982 (Oct.) 1941

- Rhinogenic Retrobulbar Neuritis. H. Brunner, Chicago.—p. 903.
- What Was Wrong with Otolaryngology in the Last War. H. P. Mosher, Marblehead, Mass.—p. 930.
- Hearing Standards for Acceptance, Disability Rating and Discharge in Military Services and in Industry. E. P. Fowler, New York.—p. 937.
- Management of [Military] Injuries to Middle and Internal Ear Including Fractures of Temporal Bone. W. E. Grove, Milwaukee.—p. 957.
- Prevention and Treatment of Acoustic Trauma in War and Civil Life. D. Macfarlan, Philadelphia.—p. 964.
- Malingering and Neuro-Otologic Considerations in Combat Service*. E. R. Lewis, Los Angeles.—p. 970.
- The Ear in Flying. J. R. Pappen, Washington, D. C.—p. 974.
- Injuries to Middle and Internal Ear.**—Grove states that the tympanic membrane may be ruptured by the direct penetration of a foreign body, by the extension of a fracture of the temporal bone and by the condensation or rarefaction of air in the external auditory canal. Traumatic ruptures not associated

with fractures of the basal part of the skull usually heal by first intention and should be treated conservatively and expectantly. If suppuration of the middle ear supervenes, time-honored methods are to be used. Suppuration of the middle ear almost always follows perforations of the drum caused by burns, and often the perforation is persistent. Suppuration rarely occurs, except when encouraged by bad management, in rupture of the drum caused by a sudden elevation of air pressure in the external canal. If fracture of the temporal bone is followed by a discharge of blood or cerebrospinal fluid from the ear, nothing should be done except to place sterile cotton in the meatus and to cover the ear with sterile dressings. After a few days, if the bleeding persists, the sterile dressings should be changed. The ear should never be cleansed in less than two or three weeks and then should be cleansed mechanically with sterile instruments. Even at this date the ear should not be irrigated, because the tympanic membrane may still be perforated. If the sigmoid sinus has been injured it should be exposed and then blocked. When a fracture of the basal part of the skull exists, its treatment is of first importance. Of the three stages (shock, increasing intracranial pressure and medullary failure) to be recognized and treated in patients with severe injuries to the head the treatment of the shock should take precedence. The indications for operation are compound fractures of the skull or fractures which involve noticeable depression, extradural hemorrhage, increased intracranial pressure not improving under medical treatment and definite local paralysis or convulsions. Medical treatment consists of (1) absolute rest in bed for three to six weeks, (2) elevation of the head and trunk, (3) administration of drugs (caffeine with sodium benzoate to lower intracranial pressure and bromides and barbiturates to control restlessness), (4) dehydration (with the giving of magnesium sulfate, the intravenous administration of hypertonic solutions of sucrose or dextrose and the limitation of the fluid intake) and (5) repeated lumbar punctures to lower intracranial pressure and to remove blood from the subarachnoid spaces. Morphine tends to increase intracranial pressure and should never be administered.

New England Journal of Medicine, Boston

225:561-600 (Oct. 9) 1941

- The Open Safety Pin—Consideration of Its Peroral Removal from Upper Air and Food Passages. L. G. Richards, Boston—p. 561
Enlargement of Heart. P. D. White, Boston—p. 571
Nutrition in War. R. S. Harris, Cambridge, Mass—p. 575
Arteritis—Diseases Associated with Inflammatory Lesions of Peripheral Arteries. S. Weiss, Boston—p. 579.

225:601-636 (Oct. 16) 1941

- Some Uses and Abuses of Chemotherapy in Pneumonia. M. Finland, O. L. Peterson and E. Strauss, Boston—p. 601
Carcinoma of Endometrium—Review with Results of Treatment Through 1935. G. Van S. Smith, Brookline, Mass—p. 608
Glaucoma and the General Practitioner. P. A. Chandler, Boston—p. 615
Surgical Care and Operative Technique. J. D. Stewart, Buffalo—p. 620

225:637-674 (Oct. 23) 1941

- Role of Roentgenologic Examination in Diagnosis of Intestinal Obstruction. E. P. Pendergrass, Philadelphia—p. 637.
Indications for Use of Miller-Abbott Tube. W. O. Abbott, Philadelphia—p. 641.
Diagnosis and Management of Acute Obstruction of Small Intestine. L. S. McKittrick, Boston—p. 647.
*Treatment of Tetanus. E. M. Chapman and R. H. Miller, Boston—p. 652.
General Anesthesia. Priscilla Sellman and U. H. Eversole, Boston—p. 657.

Treatment of Tetanus.—Chapman and Miller report the successful outcome of therapy in a case of severe tetanus. The original injury, in a boy of 10, occurred on an ocean beach, tetanus ensued six days later. The authors believe that the six point program of treatment employed was responsible for the recovery of the child. The six features were profound sedation, surgical removal of the focus of infection, moderate intravenous doses of tetanus antitoxin, frequent lumbar punctures, maintenance of an adequate respiratory exchange and the most intelligent and constant nursing care.

Ohio State Medical Journal, Columbus

37:1029-1132 (Nov.) 1941

- Cardiac Disease and Foci of Infection. N. P. Frolkis, Akron—p. 1045
Surgery for Patient with Disease of Thyroid and Impairment of Heart. J. M. Miller, Marion—p. 1048
Pernoston, Intravenous Barbiturate. B. R. Bonnot, Canton—p. 1050
Laryngeal Carcinoma. J. W. McCall, Cleveland, and A. J. Lamb, East Cleveland—p. 1053
Spontaneous Interstitial Emphysema of Lungs. Report of Two Cases and Summary of Literature. I. Miller, Urbana—p. 1056
*“Trigeminal Neuralgia” as Complication of Prophylactic Use of Tetanus Antitoxin. Case Report. M. Rosenbaum, Cincinnati—p. 1060
Discussion of Orthoptic Training. C. J. Streicher, Canton—p. 1062.
*Mastoiditis Without Classic Symptoms. F. W. Dixon, Cleveland—p. 1065.
Adenocarcinoma of Sigmoid Colon, Rectum and Anus in Children. Report of Two Cases in a Thirteen Year Old Girl and an Eight Year Old Boy with Summary of Recorded Cases up to Fifteen Years of Age. M. Oosting, Dayton—p. 1067.
Present Views on Shock. H. S. Applebaum, Cleveland—p. 1069
Endocrinology in Gynecologic Practice. A. G. Sar Louis, Cleveland—p. 1073
Cavernous Sinus Thrombosis. Recovery Following Treatment with Sulfathiazole. J. P. Eichhorn, Fort Benjamin Harrison, Ind—p. 1076
Ruptured Diverticulum of Ileum. Case Record Presenting Clinical Problems. S. Koletsky, Cleveland—p. 1078
Management of Acne Vulgaris. J. E. Rauschkolb, Cleveland—p. 1079
Ambulance. F. A. Kiebel, Columbus—p. 1081

“Trigeminal Neuralgia” Following Tetanus Antitoxin.—Rosenbaum reports the occurrence of “trigeminal neuralgia” following an injection of tetanus antitoxin. The patient, a foreman in a tool and die making plant, sustained a cut on his left forearm. The wound was immediately treated, and a hypodermic injection of tetanus antitoxin was given into the deltoid region of the left arm. (The patient “argued against the injection” because of a reaction to an intra-abdominal injection of tetanus antitoxin fifteen years previously.) The day after the injection the left upper arm became swollen and painful. This subsided in about two weeks. About two days after the injection headache and severe nuchal pain developed and lasted for three weeks. A few days after the headache and nuchal pain had subsided the patient had a sudden severe attack of “shooting” pain in the left side of his face. The attack subsided after one hour. Ten days later a similar attack ensued. This attack subsided abruptly after two hours, during which time the patient was given two injections of morphine sulfate. A third, similar, attack, lasting two hours and unrelieved by morphine, occurred six days later and a fourth attack within two days more. The patient inhaled trichlorethylene during the fourth attack, without relief. The history was irrelevant except for the reaction fifteen years before. A few days after this injection large urticarial wheals developed around the site of the injection, and for about six months the anterior surface of the abdominal wall remained so painful that the patient was unable to wear a belt or fasten the upper buttons of his trousers. Ten months after the last attack of “trigeminal neuralgia” the patient has been free of attacks and in perfect health. The close association between the “attacks” and the “meningitic” reaction (headache and nuchal pain) suggested irritation of the roots of the second and third division of the left fifth cranial nerve.

Mastoiditis Without Classic Symptoms.—Dixon states that he encountered 6 cases of atypical mastoiditis in a period of three months. Five of the patients recovered; 1 died. There was no history of an acute infection of the upper part of the respiratory tract. With the exception of 1 patient, whose discomfort began six months before operation, the patients had been ill between four and five weeks. In only 2 instances was there transient slight tenderness to deep pressure. Examination of the external auditory canal showed a narrowing of the canal anteroposteriorly in 3 instances and an elevation of the floor in 2, and in 1 the lumen of the canal was normal. The tympanic membrane was dull, red, thickened and slightly bulging on the patients' first visit. The tympanic membranes of 2 patients with more pronounced bulging were opened, but only blood was discharged for twenty-four hours. One symptom, deep bone ache, was common to all the patients. The pain was constant, and codeine and morphine were required to relieve it. This pain and the distortion of the canal and the drum were the only pathologic indications. The patient who did not recover was first seen ten days prior to his death. His discomfort, deep-seated pain in

and about the ear, had begun two weeks previously. The floor of the canal seemed elevated. The drum was thickened and red but not bulging. During the ten days he performed his usual duties as a butcher, the canal became less swollen, the tympanic membrane lost its redness and the mastoid pain disappeared. The hearing improved. When last seen by the author the patient stated that he did not feel it necessary to return for observation. That night he suddenly became irrational, vomited and showed signs of cerebellar irritation. He was brought to the hospital unconscious. The mastoid cavity was opened. Under a dense cortex, a large perisinal abscess had ruptured into the posterior fossa. Despite blood transfusions and chemotherapy, the patient died within forty-eight hours. This man was the first patient of the series and, the author believes, should have been operated on when first seen. The other 5 patients were operated on with only the deep-seated persistent pain and a dull, thickened drum to indicate operation. The agent of the infection was not established, although routine bacteriologic studies were made. Cultures on brain broth and blood agar of the exudate from the mastoid of 1 patient yielded *Staphylococcus aureus* and *Staphylococcus albus*. The presence of the latter and the fact that all the other direct smears were sterile suggest contamination. The spinal fluid from the patient who died contained the type III pneumococcus.

Public Health Reports, Washington, D. C.

56:2033-2064 (Oct. 17) 1941

Public Health Administrator's Responsibility in Field of Occupational Disease Legislation. J. J. Bloomfield and W. M. Gafafer.—p. 2033.

*Strain of Rocky Mountain Spotted Fever Virus of Low Virulence Isolated in Western United States. N. H. Topping.—p. 2041.

Electrostatic Method for Collecting Bacteria from Air. C. M. Berry.—p. 2044.

Disabling Morbidity Among Industrial Workers, Second Quarter of 1941, with Note on Occurrence of Pneumonia Among Iron and Steel Workers. W. M. Gafafer.—p. 2052.

56:2065-2104 (Oct. 24) 1941

Plans for Handling Special Health and Other Problems Incident to Army Maneuvers in Tennessee. W. C. Williams and G. F. McGinness.—p. 2065.

Health Status of Adults in Productive Ages. D. E. Hailman.—p. 2071.

New Method for Viewing Sheet Kodachrome. A. A. Stone, R. D. Reed and L. Schwartz.—p. 2087.

Rocky Mountain Spotted Fever Virus of Low Virulence.—Topping reports the isolation in the West of a strain of Rocky Mountain spotted fever virus of low virulence. The patient was seen in a hospital in Denver on May 23, 1940. He had been in Wyoming and had arrived in Denver on May 20. On this day a tick was found embedded in an old appendectomy scar and removed by a local physician. On the evening of May 21 the patient had severe chills, headache, muscular pains and, he believed, fever. The next morning he was admitted to the hospital. On May 23 he had a temperature of 103.4 F. and a maculopapular rash. Blood was drawn, and after it had clotted it was macerated in sterile saline solution, and the equivalent of about 4 cc. of whole blood was injected intraperitoneally into 2 guinea pigs. After a prolonged incubation period fever developed in 1 of these guinea pigs, from which the L strain of Rocky Mountain spotted fever was isolated. The strain has been passed through twenty-five generations of guinea pigs. Of 191 animals used 56 were killed either for transfer or for pathologic examination. There were 6 deaths among the remaining 135 guinea pigs, a fatality rate of 4.4 per cent. The rate is considerably lower than that for the mildest strain so far isolated in the East, which has a fatality rate of 8 per cent. Cross immunity tests have been done, and the L strain has given complete cross immunity with the B. R. strain of spotted fever and with the W strain. Other than the lengthened incubation period, the lack of scrotal involvement and a negligible fatality rate the L strain is indistinguishable from the usual strains isolated in the East. The author suggests that the geographic classification be dropped and that in the future strains of Rocky Mountain spotted fever be classified with reference to their high or low virulence for guinea pigs.

Rhode Island Medical Journal, Providence

24:181-198 (Oct.) 1941

Meditationes Medicorum. W. Pickles, Providence.—p. 181.

Intercapillary Glomerular Sclerosis: Diabetes Nephrosis Syndrome. B. E. Clarke, Providence.—p. 190.

Rocky Mountain Medical Journal, Denver

38:753-832 (Oct.) 1941

Treatment of Peptic Ulcer Based on Physiologic Principles. A. Ochsner and M. DeBakey, New Orleans.—p. 768.

Hypoglycemic Shock Followed by Secondary Hyperglycemia: Report of Case with Postmortem Findings. O. J. LaBarge, New Orleans, and O. A. Ogilvie, Salt Lake City.—p. 783.

Hemolytic Streptococcus Infections—Their Importance in Acute and Chronic Disease. C. S. Keefer, Boston.—p. 789.

Southern Surgeon, Atlanta, Ga.

10:773-848 (Nov.) 1941

Surgery of Biliary Tract. F. M. Douglass, Toledo, Ohio.—p. 773.

Principles Governing Diagnosis and Treatment of Acute Craniocerebral Injuries. C. Pilcher, Nashville, Tenn.—p. 783.

Traumatic Fistula of Stenson's Duct. M. B. Welborn, Evansville, Ind.—p. 793.

Relief of Contractures of Knee Following Extensive Burns. W. G. Hamm and J. H. Kite, Atlanta, Ga.—p. 795.

Survey of 496 Cases of Vaginal Bleeding. A. E. Imler, Philadelphia.—p. 802.

More Effective Surgical Mask. E. J. Poth, Baltimore.—p. 810.

Carcinoma of Ovary. H. R. Shands and R. L. Clark Jr., Jackson, Miss.—p. 813.

Osteitis Fibrosa Cystica. I. M. Wise, Mobile, Ala.—p. 819.

Tuberculosis of Breast. W. P. Nicolson Jr., Atlanta, Ga., and C. E. Gillespie, Memphis, Tenn.—p. 825.

Wisconsin Medical Journal, Madison

40:881-1012 (Oct.) 1941

Century of Progress in Wisconsin Medicine. G. Gundersen, La Crosse.—p. 895.

*Use of Venesection in Treatment of Erythremia. A. A. Holbrook, Milwaukee.—p. 899.

Clinical Value of Certain Laboratory Blood Tests. J. A. Schindler, Monroe.—p. 911.

Silicosis. A. J. Lanza, New York.—p. 923.

Tetanus with Recovery. L. C. Pomainville, Wisconsin Rapids, and L. M. Morse, Milwaukee.—p. 926.

Testosterone in Treatment of Testicular Deficiency and Prostatic Enlargement. W. M. Kearns, Milwaukee.—p. 927.

Venesection for Erythremia.—Holbrook withdrew from 125 to 750 cc. of blood from 10 patients with erythremia. He found that the venesection promptly relieved headache, nervousness, palpitation and sensations of heat and reduced, at least temporarily, the erythrocyte count, hemoglobin content and viscosity. The duration of the remissions varied; the extremes were a few days and a year. Generally venesection afforded subjective benefit for about two months. The withdrawal of lesser quantities (350 to 450 cc.) of blood seemed more effective than the withdrawal of larger ones (700 to 750 cc.). Failure to effect any symptomatic change for good or bad through venesection occurred after five (in as many patients) of the thirty-seven venesections performed. Blood viscosity tests furnish a reliable means for following the progress of patients under treatment. The results should be checked against erythrocyte counts from time to time. No reticulocyte responses were encountered in fifteen tests made after the withdrawal of 350 to 750 cc. of blood.

Yale Journal of Biology and Medicine, New Haven

14:1-120 (Oct.) 1941. Partial Index

Hippocrates and the Island of Cos. R. H. Major, Kansas City, Mo.—p. 1.

Secretion of Sulfonamide Drugs in Gastric Juice. M. Cooke, Rochester, N. Y.; H. W. Davenport, and L. S. Goodman, New Haven, Conn.—p. 13.

Factors in Resistance to Tuberculosis. B. Gerstl and R. Tennant, New Haven, Conn.—p. 29.

Rupture of Graafian Follicle and Corpus Luteum Cyst Stimulating Appendicitis: Report of Forty-Two Cases. F. D. Keller and P. D. Rosahn, New Haven, Conn.—p. 45.

Influence of Chronic Vitamin A Deficiency on Bacterial Flora of Rats. C. G. Burn, Brooklyn; A. U. Orten, and A. H. Smith, Detroit.—p. 87.

Application of Falling-Drop Method for Specific Gravity Measurement to Determination of Serum Albumin. P. H. Barbour Jr., Brooklyn.—p. 107.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

22:179-240 (Aug.) 1941

- Experiments on Cancerization of Cells in Vitro by Means of Rous Sarcoma Agent. L. Halberstaedter, L. Doljanski and E. Tenenbaum.—p. 179.
Formation of Protein Complexes in Heated Solutions of Rabbit Serum Proteins. A. Kleczkowski.—p. 188.
Effect of Heat on Flocculating Antibodies of Rabbit Antisera. A. Kleczkowski.—p. 192.
Some Properties of Complexes Formed When Antigens Are Heated in Presence of Serologically Unspecific Proteins. F. C. Bawden and A. Kleczkowski.—p. 208.
Simplified Method for Estimation of Sulfanilamide and Sulfapyridine in Biologic Fluids. L. D. Scott.—p. 220.
Effects of Sodium Hexametaphosphate (Calgon) on Complement Action of Serum. J. Gordon and W. R. Atkin.—p. 226.
Studies on Effect of Carcinogenic Hydrocarbons on Immunity Reactions. C. Hoch-Ligeti.—p. 233.

Journal of Pathology and Bacteriology, Edinburgh

53:161-326 (Sept.) 1941

- Chronic Renal Disease, Secondary Parathyroid Hyperplasia, Decalcification of Bone and Metastatic Calcification. Freda K. Herbert, H. G. Miller and G. O. Richardson.—p. 161.
Effects of Sulfanilamide, Sulfathiazole and Sulfapyridine on Development of Granulation Tissue and Their Toxic Action on Striped Muscle. L. E. Glynn.—p. 183.
Growth of Coliform Bacilli in Distilled Water. J. W. Bigger and J. H. Nelson.—p. 189.
Malignant Hypertension Associated with Hydatid Disease of Kidney. J. Davson.—p. 207.
Effect of Protosil Therapy on Antistreptolysin O Titer in Rabbits During Immunization. C. A. Green.—p. 213.
*Observations on Antistreptolysin O Titer in Relation to Mechanism of Acute Rheumatic Fever. C. A. Green.—p. 223.
Reversed Passive Skin Sensitization to Horse Serum in Human Beings. G. P. Wright and S. J. Hopkins.—p. 243.
Adhesiveness of Blood Platelets in Normal Subjects with Varying Concentrations of Anticoagulants. Helen Payling Wright.—p. 255.
*Giant Cell Chronic Arteritis. J. R. Gilmour.—p. 263.

Antistreptolysin O in Acute Rheumatism.—Green determined the antistreptolysin O titers of the serum from 1,346 adolescent boys: The mean titer in normal controls was 79; in 82.3 per cent it was less than 125 units. In scarlatina the mean titer was raised to 300, with maximal titers occurring in the third and fourth weeks of infection. In simple pharyngitis due to *Streptococcus hemolyticus* the mean was 263. The mean titer in the active phase of acute rheumatism was 444 and during the inactive phase it was 210. Of one hundred and ten attacks of acute rheumatism, 79.9 per cent were accompanied by a significant increase in the titer, which usually reached maximal proportions at or just after the height of clinical activity, in 10.1 per cent there was no change in the titer and in 3.6 per cent the titer was reduced during the active phase. Either the few patients with acute rheumatism in whom there was no increase in the titer were similar to nonrheumatic patients who failed to react to infection by antibody production or else the infection had no part in inducing the rheumatic state.

Giant Cell Chronic Arteritis.—Gilmour cites 4 cases of a rare and little known form of arteritis which affects the aorta, the branches of the aortic arch and their branches and possibly other arteries. Syphilis was excluded in 3 of his cases and in most of those reported in the literature. Tuberculosis also may be excluded. The essential microscopic change was inflammation, and the prodromal symptoms were strongly suggestive of infection. The microscopic and clinical features do not resemble those in other types of arteritis. It is probable that the disease is a separate entity. In the branches of the arch of the aorta and in the internal and external carotid arteries the distribution of the disease is focal, bilateral and symmetrical, while in the aorta it is usually widespread. The inflammation apparently heals in time, but death has occurred from rupture of an aneurysm or from thrombosis during active inflammation. Multinuclear giant cells were present in most of the affected vessels, therefore the name giant cell chronic arteritis.

Lancet, London

2:415-442 (Oct. 11) 1941

- Cysticercosis of Brain with Epilepsy and Papilledema. W. E. C. Dickson and J. D. Willis.—p. 415.
Silicosis in Stourbridge Fireclay Miners. S. Deane.—p. 417.
Syphilis of Lungs: Case. A. Clark.—p. 420.
*Action of Bismuth Carbonate in Gastric Disease. S. Alstead.—p. 420.
*Blast Injury of Lungs. J. N. O'Reilly and S. R. Gloyne.—p. 423.

Action of Bismuth Carbonate in Gastric Disease.—Alstead tried to determine the value of bismuth carbonate in relieving the pain of gastroduodenal disease and the fate of the salt in the stomach. His in vitro and in vivo experiments do not suggest that therapeutic doses of bismuth carbonate protect the gastric mucosa. After administration the salt collects in the most dependent part of the stomach and tends to adhere to a small area of the mucous membrane in the prepyloric region. The ulcer-bearing area of the stomach is rarely affected. Bismuth carbonate may exert an astringent action on the empty stomach, but even under favorable conditions this action is slight. In practice it must be considered negligible because of the minute amount of bismuth in solution with the mucoprotein of gastric juice. When a gastric astringent is required tannic acid, in the form of glycerin of tannic acid, is more reliable. The antacid effect of therapeutic doses of bismuth carbonate is trivial or entirely absent. Although large doses produce appreciable changes in gastric acidity, the changes are transient, and the side effects of such quantities, especially constipation, cannot be disregarded. In gastroduodenal disease bismuth carbonate is no more valuable than powdered milk or lactose in relieving pain.

Blast Injury of Lungs.—O'Reilly and Gloyne present 17 cases of pulmonary injury from the blast of high explosives. None of the 17 men injured were buried under debris. Shock was profound in 5 and was definite though not dangerous in the others. Dyspnea was a constant feature. Dyspnea continued till death in the 4 patients who died. Cyanosis was a common feature. Two types of pain were complained of—a central deep constant and especially severe pain and a less severe more lateral pain made worse by deep breathing. The less severely injured patients stated that the lateral pain was preventing them from breathing. The central pain disappeared after a few days in the patients who recovered, while the other pain remained for at least a week. Pain in the abdomen was common. At necropsy in each of the 4 cases extrapleural hemorrhages were observed. The intercostal spaces appeared black in contrast to the white bands of the ribs. The hemorrhages may have irritated the intercostal nerves, causing rigidity of the abdominal wall, or damage to the abdominal muscles may have caused the rigidity. A laparotomy should not be performed unless specifically indicated. Free hemoptysis was observed in 2 patients and in the others blood-stained sputum and brightly stained froth in the air passages. A number had a cough after the first twenty-four hours, in some of them troublesome. In patients with uncomplicated injury the cough and sputum disappeared in ten days, but it persisted in those with severe late effects or complications. Restlessness was a constant symptom and bore a direct relation to the severity of the damage. The pathologic observations suggest that the restlessness is due to an irritative cranial lesion. Ruptured eardrums were noted. Purulent otorrhea developed in some patients, and in a few it was extremely resistant to treatment. Roentgenograms of the chest of 7 patients were taken within seventy-two hours of injury. In those with severe injury there was a heavy mottling over large areas of the pulmonary fields. The most striking pathologic feature was an effusion of blood. The chief microscopic characteristics were an extensive outpouring of erythrocytes, the rupture of elastic tissue and capillaries, secondary infection with streptococci and bronchopneumonia. All patients with shock were treated with heat and morphine. Seven patients were given oxygen continuously, and transfusions of blood and/or plasma were given to 5. Unless concomitant hemorrhage exists plasma is indicated. Sulfapyridine was given prophylactically to 5 patients, and when pneumonia developed the dose was increased. The drug was withdrawn when the temperature dropped to normal. In blast injury of the lung rest, which was possible only with morphine, is of prime importance and anesthetics are contraindicated.

Chinese Medical Journal, Peking

60:99-200 (Aug.) 1941

- *Treatment of Infantile Tetany with Dihydrotachysterol (A. T. 10). Theresa T. Woo, C. Fan and F. T. Chu.—p. 99.
- Hemolytic Streptococci from Parturient Women, with Reference to Their Serologic Classification and Relation to Puerperal Fever. C. J. Wu.—p. 109.
- Increased Resistance to Syphilis in Rabbit Following Bilateral Orchidectomy. C. K. Hu and S. N. Tsao.—p. 118.
- Comparative Study of Four Slide Precipitation Tests for Syphilis. E. C. J. Sung.—p. 126.
- Study of Outbreak of Scurvy: I. Clinical Features. Julia Morgan and A. S. Gault.—p. 141.
- Management of Bilateral Advanced Pulmonary Tuberculosis: Report of Clinical Results of 100 Cases of Simultaneous Bilateral Artificial Pneumothorax and Twenty-Five Cases of Contralateral Pneumothorax Combined with Thoracoplasty. M. H. Chien.—p. 156.
- Diagnosis of Tuberculosis of Mandible. C. M. Meng.—p. 169.
- Determination of Soybean Milk Used as an Adulteration in Cow's Milk. F. Liebenthal and W. H. Adolph.—p. 174.
- Peculiar Morphology of Malaria Parasite from a Patient and Possibility of Its Being Plasmodium Ovale. Y. T. Yao and C. C. Wu.—p. 178.
- Preoperative Improvement with Tourniquet. P. E. Adolph.—p. 184.
- Abscess of Sclera. E. Chan.—p. 189.

Dihydrotachysterol for Infantile Tetany.—Woo and her co-workers gave dihydrotachysterol to 5 Chinese infants (from 4 to 52 days old) suffering from infantile tetany. The pathogenesis of the tetany of these infants probably was a congenital lack of vitamin D and calcium. The diets of 4 of the mothers were deficient in vitamin D or calcium or both. The roentgenograms of 3 infants presented evidence of coexisting rickets. Dihydrotachysterol was highly effective in controlling the tetany in 4 infants. Its effect on the concentration of serum calcium and phosphorus was prompt. After therapy the coexisting rickets of 2 infants showed roentgenologic improvement. Fairly large doses, 1 to 1.5 cc. daily, of dihydrotachysterol for one to four days were necessary to raise the serum calcium to a normal level. Therapy with the drug must be individualized. It is imperative that the blood calcium level be determined at intervals before and after treatment is instituted. The chief advantage of dihydrotachysterol to vitamin D and calcium in the treatment of infantile tetany appears to be its prompt action; the principal objections are its high cost and the danger of hypercalcemia if excessive doses are used.

Schweizerische medizinische Wochenschrift, Basel

71:1009-1036 (Aug. 30) 1941. Partial Index

- Anorexia Mentalis and Simmonds' Disease. M. Roch and Marcel Monnier.—p. 1009.
- *Antihormones. C. A. Joël.—p. 1011.
- Circulatory Collapse, Temporary Anuria and Extrarenal Azotemia. O. Spühler and H. U. Zollinger.—p. 1013.
- Mineral Metabolism. A. Ulrich.—p. 1020.
- Indications for Transfusion of Universal Preserved Blood. R. Fischer.—p. 1024.

Antihormones.—Joël discusses some properties and the clinical importance of the antigonadotropic and of the antihyrotropic substances. The antigonadotropic substance cannot be completely purified but remains associated with the serum globulins. It does not develop in a special organ, but rather in the serum and probably in the reticuloendothelial system. Analysis of pregnancy serums revealed that antihormones are not formed during pregnancy. From this it was concluded that normally the body does not employ antihormones as regulatory devices and that it reacts with antihormone formation only if heterogenic hormones are administered. The antihyrotropic substances are found in the spleen and in the liver of animals treated with thyrotropic substances. Antihyrotropic hormone occurs in normal serum, whereas the antigonadotropic factor is not present in the serum of untreated animals. Antihyrotropic substance occurs in various disorders. In patients with exophthalmic goiter, for instance, it is present in smaller quantities than in healthy persons, whereas in cretins it occurs in larger quantities. The author raises the question whether antihormone formation plays a part in prolonged hormone therapy. Insulin, epinephrine, solution of parathyroid, vasopressin, oxytocin, estrone, thyroglobulin and thyroxine do not cause habituation, but it is generally admitted that habituation is produced by the anterior pituitary hormones that contain protein, that is, gonadotropic, thyrotropic, contrainsular and other hypophysial hormones.

mones. However, the clinician needs to fear the antihormone formation with these latter hormones only, if he injects them daily for periods of months. Gonadotropic substance of human origin (substance prepared from pregnancy urine) does not lead to antihormone formation; however, extracts of mare urine do so, if they are given daily for three months or more. The author thinks that antihormone formation can be avoided by alternating the preparations.

71:1037-1060 (Sept. 6) 1941. Partial Index

- Results of Etiologic Research on Goiter During Sixty Year Period from 1880 to 1940: Significance for Prevention. F. Wolter.—p. 1037.
- *Tolerance for Large Doses of Anhydrohydroxyprogesterone After Hysterectomy and Castration and Conditions of Elimination. R. Wenner and C. A. Joël.—p. 1040.
- Steroids Eliminated in Urine During Administration of Anhydrooxyprogesterone. M. W. Goldberg and E. Hardegger.—p. 1041.
- *Iodine Distribution in Normal and Sclerotic Vascular Walls. P. Masson.—p. 1042.

Anhydrohydroxyprogesterone After Hysterectomy and Castration.—The investigations of Wenner and Joël were made on 2 women of 38 and 40 respectively who had undergone total hysterectomy twenty-eight and thirty days before the administration of the hormone. The ovarian function had been excluded by massive doses of roentgen rays that are used in single carcinoma irradiations. However, the time interval between roentgen castration and hormone administration was relatively short, seven and eight days, respectively. It is of clinical interest that 1 Gm. of anhydrohydroxyprogesterone, given on three successive days, was well tolerated. Chemical analysis of the urine corroborated Frank's observation that no pregnandiol is eliminated after the administration of anhydrooxyprogesterone. Two other factors that were detected seem of special interest: 1. The control urine as well as the urine collected after the treatment contained from 0.1 to 0.2 mg. of pregnandiol per liter. This corresponds to the observation made by Jones and Te Linde that hysterectomized women eliminate pregnandiol without the administration of progesterone. From this it must be concluded that it is formed in the body without cooperation of the uterus and even eight days after exclusion of the ovaries. 2. The control urine and the urine collected after treatment contained also approximately 0.2 mg. of androsterone per liter. Thus the formation of androsterone and pregnandiol in the female organism is not dependent on the uterus and probably not on the ovaries. The authors think that in the search for the site of formation the adrenal cortex should be considered, because it plays an important part in the stearin metabolism.

Iodine Distribution in Vascular Wall.—Masson used rabbits for his experiments, because arteriosclerosis can readily be produced in them. Of 6 rabbits which were free from arteriosclerosis 5 were given potassium iodide and 1 was not. In 3 the aorta was free from iodine; in the 3 others only small quantities of iodine were detectable. In the aortas of the animals which had been made arteriosclerotic with cholesterol and had been treated with potassium iodide, it was always possible to demonstrate iodine, and except for the iodine content in 1 animal, the iodine content was always greater than in the nonsclerotic animals. The author concludes from these observations that iodine proves so valuable in arteriosclerosis because the vascular wall as such has a certain affinity for it but that the iodine affinity of the arteriosclerotic wall is especially great. With regard to iodine affinity, the sclerotic vascular tissue behaves like the syphilitic and the tuberculous tissue.

Brasil-Médico, Rio de Janeiro

55:625-640 (Sept. 13) 1941. Partial Index

- *Therapy of Tropical Ulcer with 1 per Cent Potassium Arsenite Solution (Fowler's Solution). C. de Castro.—p. 625.

Potassium Arsenite Solution for Tropical Ulcer.—De Castro reports good results in 150 cases of tropical ulcer from the following therapy: The ulcer is thoroughly cleaned with pieces of cotton or of gauze. Scrapings of the tissues at the bottom of the clean ulcer are taken for smears. A swab of absorbent cotton is soaked in a 1 per cent potassium arsenite solution (Fowler's solution) and introduced into the ulcer in

such a manner as to have it in constant contact with all the excavations, bottom and borders of the ulcer for ten minutes. Then it is removed and replaced by a piece of plain gauze and the treatment repeated every day up to the disappearance of spirilla in the smears, which, as a rule, takes place in four days and coincides with diminution of the secretion and cleaning of the ulcer. At this point the application of potassium arsenite is stopped and replaced by application of an ointment which is prepared with petrolatum, yellow mercuric oxide, zinc oxide and hydrous wool fat. Complete healing is obtained in about one month. The scars are fine, flexible and smooth. The treatment is moderately painful, but it is well tolerated. For children and for persons sensitive to pain it is advisable to induce a light superficial imbibition anesthesia with 2 per cent procaine hydrochloride immediately after cleaning the ulcer and before applying the potassium arsenite solution. The therapy can be given to ambulant patients. It is practical, economical, harmless and reliable. Early in its course the necrotic tissues of the ulcer are eliminated, the secretion is favorably modified, the bad odor of the ulcer is controlled and the ulcer is sterilized.

Pasteur, Revista Mensual de Medicina, Mexico, D. F.
2:57-88 (Sept. 15) 1941. Partial Index

Sulfanilamide Therapy in Gastrointestinal Diseases. W. Nimeh.—p. 57.
*Sulfanilamide in Therapy of Chancroid. L. G. Vazquez Vega.—p. 70.

Sulfanilamide for Chancroid.—Vazquez Vega reports good results from sulfanilamide therapy for chancroid, alone or complicated by acute suppurative adenitis, for chancroid phymosis and for phagedenic chancroid. The drug may be given either locally, in the form of powder, or by mouth. When the local treatment is used the entire chancroid or adenitic lesion is covered with sulfanilamide powder (which is obtained by pulverizing sulfanilamide tablets) and dressed with plain gauze; the treatment is changed every day or every other day until healing of the chancroidal lesion. In cases of chancroid phymosis a 25 per cent suspension of the drug in petrolatum is prepared, and a swab of cotton is soaked in the preparation and brought into contact with the lesion. The duration of the local treatment depends on the clinical reaction. Generally the patient is cured in two weeks. The treatment is harmless and efficacious and may be given to ambulant patients.

Revista Clínica Española, Madrid

3:89-188 (Aug.) 1941. Partial Index

Chemical Composition of Bone and Biochemistry of Ossification. J. Ruiz Gijón.—p. 89.
Exploration of Terminal Ileum. C. Marina Fiol and J. Rof Carballo.—p. 97.
Clinical and Experimental Study of Exanthematous Typhus: Epidemic in Sevilla. G. Romero Escacena, J. Bolinches and M. Álvarez.—p. 106.
Study of the Fourth Derivation of the Electrocardiogram. J. Lozano López.—p. 115.
Luxation of Long Part of Biceps. J. Díaz de Rábago and F. López Arenal.—p. 119.
Spasmus Nutans and Salaam Spasm. M. Calzada Rodríguez.—p. 125.
Consideration of Two Cases of Spurious Arterial Aneurysms, One of Them with Arteriovenous Fistula. J. Gascó Pascual and C. Carbonell Antolí.—p. 131.
*Functional Test of Stomach. R. Chamorro-R. Salinas.—p. 139.

Test for Gastric Cancer.—Chamorro-R. Salinas explores and evacuates the fasting stomach by means of Einhorn's tube. He then introduces 250 cc. of a 5 per cent alcoholic solution to which several drops of a 1 per cent solution of methylene blue have been added. After that he aspirates every fifteen minutes specimens of fluid showing a homogeneous blue. The intensity of the coloration gradually subsides until it has completely disappeared. Normally the coloration persists for twenty-four hours and more and is independent of the gastric acidity. However, the author states that in the presence of gastric cancer, and gastric cancer only, an ascending discoloration can be observed in the test tubes; at the end of an hour they are completely colorless, or at the most they show a blue ring at the upper rim. This metachromatic discoloration has no connection with anacidity, the presence of organic acids or blood, and the author regards it as specific for gastric cancer.

Archiv für Kreislaufforschung, Dresden

9:1-122 (July) 1941. Partial Index

Influence of Exclusion of Vagus on Blood Pressure. A. Jarisch.—p. 1.
*Electrocardiographic Investigations During Electric Shock Therapy of Schizophrenia. M. Streit.—p. 11.
Estimation of Pulmonary Circulatory Disturbances. K. Hohenner.—p. 45.
Scarlet Fever Myocarditis. J. Eckert-Möbius.—p. 91.

Electrocardiographic Investigations During Electric Shock.—Streit describes electrocardiographic studies on 39 schizophrenic patients who underwent electric shock therapy. In all, one hundred and ninety electrocardiograms were made after thirty-five total shocks and thirty abortive shocks. The changes after total shock are mostly disturbances in the rhythm. At first there is usually a sinus tachycardia up to 250 beats per minute. After this has subsided, various types of arrhythmia appear (sinus arrhythmia, auricular and ventricular extrasystoles, combinations of auricular and ventricular extrasystoles with vagus arrhythmia). The T wave is elevated immediately after the attack, but three to eight minutes later it passes through a phase of flattening. At the end of one to two hours the changes disappear. The ST interval is lowered in approximately 25 per cent of the cases. This lowering of the interval often accompanies an elevation of the T peak. Of two electrocardiographic recordings made during the latent period one shows, in addition to a sinus tachycardia, an elevation of the T wave and the second a slight flattening of the T wave. During the abortive shock, rhythmic disturbances are rare; auricular and ventricular extrasystoles were observed in 3 cases. The abortive shock is characterized by severe bradycardia and cardiac arrests. The irregularities in the heart beat are the most important of the electrocardiographic changes during electric shock. Immediately after the attack, the irritation of the sympathetic, with sinus tachycardia, predominate; some minutes later, vagus effects become evident, in that now there are also a sinus and vagus arrhythmia and auricular, and somewhat less often ventricular, extrasystoles. Generally, the extrasystoles disappear after four or five minutes. The many extrasystoles after electric shock were a surprise, since Bini and Cerletti, the investigators who developed the electric shock therapy, observed only mild arrhythmias with extrasystoles and considered them insignificant. Streit's observations indicate that the electrocardiographic aspects of electric shock are similar to those of metrazol shock. The electric shock therapy is not without danger for the circulation. The cardiac arrests may, under certain conditions, lead to permanent heart failure and the frequent rhythmic disturbances to ventricular fibrillation.

Deutsche medizinische Wochenschrift, Leipzig

67:723-830 (July 4) 1941. Partial Index

Experiences with Local Chemotherapy with Mesudin-Prontalbin. E. Schneider.—p. 723.
*Clinical Observations on Pellagra and Its Treatment with Nicotinic Acid Amide. H. Schroeder and Dramoff.—p. 726.
Diagnosis and Therapy of Chronic Poisoning with Arsenic. A. Ilamori.—p. 728.
Anatomic Aspects of Fatal Infections with Paratyphoid Breslau Bacilli. H. Meessen and H. H. Merkel.—p. 731.
Clinical Experiences with Depot Insulin. R. Schwab.—p. 738.
Tincture of Belladonna in Gastrointestinal Disturbances. R. F. Weiss.—p. 738.

Treatment of Pellagra with Nicotinic Acid Amide.—Schroeder and Dramoff state that pellagra in Bulgaria occurs endemically in regions in which maize and wheat grits are the only sources of protein in the diet. These vegetable proteins require the pellagra preventive substance for their proper utilization; that is, the intake of large quantities of maize or wheat grits increases the requirements for the antipellagra factor. The toxic action of vegetable proteins is often accompanied by porphyrinuria. This disorder is a constant symptom of pellagra, and it is encountered also in favism (bean poisoning) or in lathyrism. Porphyrinuria causes light-sensitivity of the skin of pellagrins. The treatment of pellagra has been greatly simplified since the discovery of the pellagra preventive substance. However, it should be remembered that pellagra is rarely a monoavitaminosis. The pellagrous manifestations of the gastrointestinal tract, of the skin and of the nervous system yield rapidly to treatment with nicotinic acid, but the general weak-

ness and anemia require the simultaneous administration of the other factors of the B complex in the form of yeast or liver extract. In order to insure a permanent cure of pellagra it is necessary to change the diet or to administer the entire B complex. The daily dose of nicotinic acid or of nicotinic acid amide is between 100 and 1,000 mg. It has proved advantageous to give 60 to 125 mg. four times daily by mouth. Beef, pork, rabbit meat, hog liver, milk, Savoy cabbage and yeast are rich natural sources of the pellagra preventive substance.

Deutsche Zeitschrift für Chirurgie, Berlin

254:289-406 (Jan. 4) 1941. Partial Index

Appendicitis and Its Treatment. J. Jungbluth.—p. 289.

Clinico-Anatomic Correlations in Exophthalmic Goiter. G. Guerreri d'Antona.—p. 318.

*Anuria After Transfusion of Conserved Blood. W. Brunner.—p. 350.

Stability of More Extensive Use of Choledochoduodenostomia Externa. H. Geissendörfer.—p. 379.

Anuria After Transfusion of Conserved Blood.—Brunner says that at his clinic the transfusion of conserved blood produced practically the same results but also the same complications as did the transfusion of fresh blood. Rarely he saw more severe reactions after the transfusion of conserved than after the use of fresh blood. He thinks that a final evaluation is still impossible, since numerous investigations are still uncompleted. He does not share the view expressed by Jeanneney and his collaborators, according to which the danger of transfusion shock is less after the transfusion of conserved blood than after the transfusion of fresh blood, because the colloidal state of conserved blood is already stabilized and its composition can be better controlled. The author warns against too great optimism in this respect and reports 3 cases in which anuria resulted following the transfusion of conserved blood. Blood transfusion was indicated on account of shock. All recipients had blood of group O, and so did the donors, with one exception, when homogenized blood was used from four donors with group O blood and one donor with group A blood. The transfusion, which in each case provided 300 cc. of blood, was given, with additional physiologic solution of sodium chloride, in the form of an intravenous drip lasting for two or three hours. The preliminary biologic tests never disclosed disturbances, and there were no reactions during the transfusion. The ages of the conserved bloods varied from eleven to thirty-two days, but in the first patient, even the eleven day old blood produced a thirty-six hour anuria with subicterus as the result of massive hemolysis. It is possible that an accidental unilateral ureteral ligature contributed to the anuria, which, however, was first elicited by the hemolysis. Subsequently there developed a refractory renal insufficiency with dynamic ileus without peritonitis. In the second case, of the most severe anuria, the course terminated in death five days after the transfusion of conserved blood, because the anuria failed to respond to alkali therapy, to diuretics, to vasodilator agents or to lumbar anesthesia. Renal decapsulation or denervation was impossible on account of the greatly impaired general condition. In the third case, in which the homogenized conserved blood was used, the course was the same as in the 2 others. Following anuria of thirty-six hours' duration, renal insufficiency developed which seventeen days later terminated in death from uremia.

254:407-554 (April 15) 1941. Partial Index

Roentgenologic Examination of Neck and Head of Femur. O. Voss.—p. 407.

Clinicotherapeutic Experiences in Echinococcosis of Spleen. A. Nanna and E. Adam.—p. 422.

Partial Inversion of Duodenum. G. Töndury.—p. 442.

*Anaphylactic Reaction After Electroresection of Prostate. F. Arnoldt.—p. 460.

Endangiitis Obliterans of Brain. P. Sunder-Plassmann.—p. 463.

Clinical and Experimental Investigations on Regeneration Capacity in Epiphyseal Zone of Long Tubular Bones. F. Becker.—p. 488.

Treatment of Acute Osteomyelitis. K. Kratochwil.—p. 542.

Anaphylactic Reaction After Electroresection of Prostate.—Arnoldt reports on a man aged 76 with hypertrophy of the prostate complicated by considerable renal damage and mild urinary infection. Electroresection was carried out with the aid of local anesthesia, after two weeks of preliminary treatment. The prostate had no median lobe, but the two lateral ones, particularly the right one, considerably constricted the

urethral lumen. About 3 Gm. of tissue in all was resected from the two lobes. Moderate hemorrhage was readily arrested, and a catheter was introduced. The postoperative course was uneventful, but the result was unsatisfactory in that the residual urine still amounted to 170 cc. After thirty-three days, the electroresection was repeated, the removed prostatic tissue again amounting to 3 Gm. Three to four hours after the second electroresection there appeared, along with a sensation of extreme heat and itching, erythema and swelling of skin, particularly on the face and the extremities. The patient was given, immediately and on the following days, intravenous injections of 10 cc. of calcium-Sandoz. The cutaneous manifestations and the temperature increased on the following day and reached their maximum in the afternoon. The swelling and the exanthem involved the entire body but were especially severe on the face. Respiration was accelerated, and the pulse was soft and frequent. There were severe head and muscular aches and itching and burning of the eyes. With desquamation of the skin, the symptoms gradually subsided in the course of three days. The exanthem resembled a severe urticaria. The clinical picture indicated a toxic or allergic genesis. The patient had received only the medicaments he had been given before and had eaten nothing but the customary breakfast. The author concludes that the anaphylactic reaction was caused by the combustion products of the electroresection, pointing out that the electric current denatures the homogeneous cell protein into a heterogeneous substance, which sensitized the body during the first electroresection; that is, in the course of days the patient became allergic and the renewed electroresection elicited the anaphylactic reaction.

Nordisk Medicin, Stockholm

11:2577-2666 (Sept. 13) 1941

Hospitalstidende

Lack of Antipernicious-Anemia Principle in Liver Extract from Electively Resected Fundus of Stomach of Swine. (Clinical-Therapeutic Investigation.) S. Petri, J. Bing, E. Nielsen and Aage Kjerbye Nielsen.—p. 2577.

Determination of Vitamin B₁ Content in Urine: Modification of Thiochrome Method. K. Wassmann.—p. 2582.

Recent Investigations on Coagulation of Blood. T. Astrup.—p. 2586.

Finska Läkarsällskapets Handlingar

Adjustment of Aged to Life and Their Struggle Against Death. E. Quarnström.—p. 2591.

Reaction in Rectum After Irradiation Treatment of Cancer of Uterus. J. J. Chydenius.—p. 2595.

Changes in Size and Form of Red Blood Corpuscles in Infants Shortly After Birth. C. A. Hernberg.—p. 2599.

*Secretion of Gonadotropic Hormones in Urine in Cases of Tumor of Testis. L. Furuhielm.—p. 2603.

Amyloidosis in Chronic, Not Suppurative Affections of Joints. R. Gordin.—p. 2609.

Gonadotropic Substance in Urine in Tumor of Testis.—Furuhielm studied 44 cases of malignant tumor of the testis and 1 of extragenital tumor that produced gonadotropic substance. There were 21 cases of other lesions of the testis and 69 other cases of different diseases in men as controls. He found the secretion of gonadotropic substance in the urine an aid in diagnosis in cases of tumor of the testis. However, increased secretion of gonadotropic substance also occurs in certain other diseases in men, and the biologic percentage of error must be considered. He states that in hormone analysis qualitative hormone differentiation according to Hamburger is of great value. If chorionic gonadotropin is secreted, mixed epithelioma is most likely. If in addition the pregnancy reaction is positive, chorioepithelioma can be suspected. If the follicle stimulating factor is established in increased amounts, a seminoma is indicated. Even if it does not agree with the histologic diagnosis, hormone analysis may be decisive for therapy and prognosis. Tumors of the testis which secrete chorionic gonadotropin usually have only a transient radiosensitivity, while those which secrete the follicle stimulating factor are often more sensitive to roentgen treatment. The prognosis is most favorable in the cases in which less than 165 mouse units of the follicle stimulating factor is secreted. It is especially unfavorable if both kinds of gonadotropic substance are established.

Hygiea

Vaccination Against Infectious Diseases as Measure of Public Protection. C. Kling.—p. 2613.

Book Notices

The Treatment of Infantile Paralysis in the Acute Stage. By Elizabeth Kenny. Cloth. Price, \$3.50. Pp. 285, with 72 illustrations. Minneapolis & St. Paul: Bruce Publishing Company, 1941.

This book represents an attempt to present the argument that spasm is the damaging and ever present symptom of the disease infantile paralysis. Miss Kenny describes in infinite detail the treatment of infantile paralysis in the acute stage by means of hot wet compresses without splints or braces. The terminology used is somewhat confusing. Any physician who has been thoroughly grounded in physiology, anatomy and pathology and has observed the degenerative changes in the anterior horn cells of the spinal cord of a monkey or of a human victim of acute anterior poliomyelitis will find much in the Kenny theory that is absurd and unscientific. The confusing discussion of pathologic principles and the rather odd mixture of anatomic terms and descriptions make it difficult to read the book or to follow some of the arguments by the author.

Spasm is often present in the early stages of acute anterior poliomyelitis and as such has been seen by every one who has studied the disease. Miss Kenny has definitely shown that the early application of hot wet dressings properly applied will aid in the reduction of the amount of muscle spasm, in the relief of pain and in the recovery of the patient. On the other hand, she has failed to recognize that fibrous tissue replacements of muscles, subsequently producing shortening and actual contracture, are not spasm. The enthusiasm of this remarkable woman is shown in every chapter of the book. This enthusiasm borders on religious fanaticism. Also she is completely on the defensive. In this book she has described her early experiences in Australia and England and the more recent and perhaps more pleasant years in Minneapolis.

The Kenny opposition to the use of splints is undoubtedly engendered by the fact that she has seen a great many patients with joints stiff and muscles fibrosed by unwise, prolonged, total immobilization. To this extent her argument is well taken. However, there are patients for whom certain types of splints are important even during the acute or subacute stages of the disease. There are patients who would undoubtedly die of respiratory paralysis if they were not placed in a respirator. There are other patients who would never walk a step without the aid of the braces which she condemns.

The medical profession of the world owes to Sister Kenny a debt of gratitude for having made us realize that prolonged splinting without exercise, without heat and moisture applied to the limbs, is harmful. It is hoped, however, that the public and the medical profession in general will not be so completely swayed by the enthusiasm of this remarkable woman that they will refuse to use splints where only splints can prevent deformities or will refuse braces when only through braces can independent and self care be made possible. We should be sufficiently liberal minded to accept the good elements of the Kenny theory without losing our balance and falling head over heels into a pit which both Galen and Hippocrates succeeded in climbing out of many centuries ago.

Surgery of the Heart. By E. S. J. King, M.D., M.S., D.Sc. Cloth. Price, \$13.50. Pp. 728, with 268 illustrations. Baltimore: William Wood & Company, 1941.

The author is honorary surgeon to outpatients, Royal Melbourne Hospital of Melbourne, Australia. The book originated as a dissertation prepared by the author and submitted to the Royal College of Surgeons in 1938. It was awarded the Jacksonian Prize. The book is divided into two sections. The chapters in the first section are on the development of the heart, comparative anatomy of the heart, the anatomy of the heart, developmental abnormalities of the heart, histology of the heart, physiology of the heart, pathology of the heart, radiology in examination of the heart and electrocardiography. The chapters in the second section are on the surgical approach to heart diseases, experimental investigations, diseases of the heart, diseases of the myocardium, diseases of the coronary vessels, diseases of the endocardium, diseases of the pericardium, diseases

of the great vessels, diseases of the pulmonary artery, diseases of the pulmonary veins, diseases of the aorta and diseases of the venae cavae.

The book is more than a surgical treatise. A large part is devoted to nonsurgical subjects. The author is thorough in his review of the literature. This is the most valuable feature of the book. Any one desiring a bibliography will find it readily available.

The literature on the surgery of the heart presents difficulties in the way of analysis. The total number of operations on the heart is not large when compared to operations on other organs, and the experiences of any one surgeon are relatively few. This lack of broad experience results in a paucity of data on the subject. The surgical experiences are inadequate to give a final answer to many questions. We deal then with the expression of opinions and some of these are of a conflicting nature. The author does almost as well as can be expected with material of this nature. For example, he advocates opening the pericardium in patients with enlarged heart. After advocating this operation he concludes that "the indications for the procedure are not yet known; a great deal of information is required before they can be determined exactly. On the other hand, the operation may be performed readily under local anesthesia and without appreciable risk. For this reason the specification of rigid criteria is not, in the early stages of investigation, so important as it is for technically formidable procedures." After reading the discussion of this subject, the reader cannot be certain whether this operation should be applied. If it is as good as the author claims it to be, why has the operation not been done more frequently so that the indications are clearly known? It is obvious that additional critical experiences are necessary to ripen this subject. Similar statements can be made about other subjects discussed in the book. The reviewer doubts whether heart surgery is far enough developed for a book.

Cancer of the Face and Mouth: Diagnosis, Treatment, Surgical Repair. By Vilray P. Blair, M.D., Sherwood Moore, M.D., and Louis T. Byars, M.D. Cloth. Price, \$10. Pp. 599, with 324 illustrations. St. Louis: C. V. Mosby Company, 1941.

This is a new and important study of an old and extremely important subject. Washington University and its associated hospitals in St. Louis have afforded the "terrain" on which these three authors, working as a team, carried out intensive studies on epithelial cancer in 1,500 cases over a period of twenty years. A foreword by Dr. J. M. T. Finney sets forth the "right" of these men to authoritative consideration.

One would assume that external malignant growths afford the best chance for early diagnosis. Not so here. Only from 5 to 10 per cent of all cases can be classified as "early." Three reasons are cited: 1. The patient refuses the diagnosis or accepts it and demands a guaranteed cure. Most often he becomes the victim of quackery and returns too late to his first adviser. 2. There is a lack of diagnostic acumen when diagnosis might have been made early. 3. Misinterpretation occurs of the microscopic report of the pathologist who writes "no cancer found," which is not at all understood by the practitioner when he assumes that this means no cancer present. Moreover, one is likely to regard cancer of the mouth or face as "mild," but some of these growths are terribly malignant from the outset, notably cancer of the sinuses, "usually of the highest grade of malignancy." The diagnostician must depend on his eye, his finger, the knife and the microscope. When all of these are given their true weight, the patient's chances of life extension are multiplied many times.

One concludes from this book that the authors believe surgery the method of choice in this field. Irradiation holds second place save in those advanced cases in which surgery seems impossible. But at operation the surgeon must avoid "grafting" spilled cancer cells into a fresh wound, and he must not "squeeze" these cells into the general blood and lymph circulation.

These principles are so axiomatic that they are probably overlooked now and then. In any event the salvation of the patient depends on early diagnosis, prompt, effective treatment, selection of the correct treatment for the individual case and persistent execution of "the plan" originally set down.

Chapter XVIII, written by Dr. Sherwood Moore, deals with irradiation; that is, with the use of roentgen rays, radium or

radon, singly or in combination or in sequence. While these agents may be extremely useful, especially in making cancer more "tolerable," they can cause a fatality. It is difficult to control them completely; they act on normal cells adversely as well as on diseased cells. In the general body economy they may cause acidosis or, at least, increase it and may bring about "roentgen sickness," the symptoms of which are anorexia, general malaise, nausea, sometimes vomiting and, if treatment extends over the abdomen, intractable diarrhea. Under such conditions the situation gets entirely out of hand, and the patient hurries to his doom.

While there are no colored plates in the book, the multiplicity of excellent photographs and the prodigality with which line drawings have been showered on the pages in order that the reader may thoroughly understand operative technic, plus the quality of paper and print, make this volume first in its field, and one may predict its usefulness over a long span of years to come.

Diseases of the Blood and Atlas of Hematology with Clinical and Hematologic Descriptions of the Blood Diseases Including a Section on Technic and Terminology. By Roy R. Kracke, M.D., Professor of Bacteriology, Pathology and Laboratory Diagnosis, Emory University School of Medicine, Atlanta. Second edition. Cloth. Price, \$15. Pp. 692, with 100 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

The second edition of this excellent book has been enlarged by the addition of one hundred and sixty pages, ten new color plates and twenty-nine other new illustrations. Among the new material are data on the fractionation of liver extract, new chapters on hemolytic anemias and hemoglobinuria, new material on the action of drugs on the blood, hemoglobin and its derivatives, transfusion and the operation of a blood bank, the use of blood plasma and recent work on the bone marrow. There is a section on vitamin K and new material on the treatment of leukemia. The plates and pictures are unusually good, and the text is presented in a clear cut fashion with the free use of outlines and specific definitions. The section on the blood in animals will be welcomed by many experimenters. The chapter on hematologic technic is extensive and detailed. The bibliography has been brought up to date and the index is extensive. The book is now well established as one of the classics of hematology and is indispensable for any one looking for authoritative, comprehensive and well ordered data on blood.

The Microbe's Challenge. By Frederic Ebersson, Ph.D., M.D., Director of Laboratories; Pathologist, Gallinger Hospital, Washington, D. C. Cloth. Price, \$3.50. Pp. 354, with portrait. Lancaster, Pa.: Jaques Cattell Press, 1941.

For the reader who wants detailed and technical information about bacteria translated into terms understandable for the layman, this is an excellent, if difficult, book. The book is as clear an explanation of highly technical relationships as could be expected, in view of the difficulties of translating specialized scientific materials into language readily understood by the nonprofessional reader. The book contains chapters on the fundamental facts relating to bacteria in general, the historical background of our knowledge of bacteriology, the ways of parasites, changes and variations in microbe life, the chemical behavior characteristics of bacteria, vaccines and viruses and insect borne diseases. Research and a survey of the situation today are each made the subject of a chapter. The book is exceptionally well made and beautifully printed with a clear type face generously leaded. Its only illustrations are a frontispiece photograph of Louis Pasteur, an insert page showing the first microscope on one side and van Leeuwenhoek on the other, an occasional drawing after the manner of woodcuts and a map showing distribution of plague in Manchuria in 1910. There is an adequate glossary and a satisfactory index.

The Complete Weight Reducer. By C. J. Gerling. Cloth. Price, \$3. Pp. 246. New York: Harvest House, 1941.

The title—and some of the subtitles on the slip cover: "The Modern Spot Reducer," "Manual of Slimming Garments"—filled the reviewer with apprehension, which however was largely relieved after reading the text. The book is written for the "average reducer," i. e. for the interested layman, and may be used as a dictionary, the various points of interest being listed in alphabetical order. It has practical merit mainly in describ-

ing and exposing most of the popular quackeries and frauds and in stressing the dangers of self prescription as well as the necessity of medical consultation. In its more ambitious aims—when it tries to explain metabolic processes, the role of endocrine glands, the importance of heredity—it is less successful, as such points do not lend themselves to categorical, lexicographic presentation. Altogether, the book should be popular with those "reducers" who want some information on their problems even though it is not always truly instructive and in some instances (effect of exercise on local fat deposits) inaccurate.

Die Grösse und Form der roten Blutkörperchen bei Menschen verschiedenen Alters unter physiologischen Verhältnissen. Von Carl August Hornberg. Acta medica Scandinavica, Supplementum CXXII. Paper. Pp. 92, with 21 illustrations. Helsingfors: Mercators Tryckeri, 1911.

This monograph presents a comprehensive review of the literature and an analysis of the blood of 236 persons studied by the author. The data are divided in seven age groups: infants under 14 days, children from 2 months to 4 years, school children from 6 to 12 years, boys and girls from 13 to 19 years, adults from 22 to 39 years, a middle aged group from 42 to 60 years and persons from 62 to 90 years. The data for each patient are given and analyzed in terms of age and sex. In these groups the average red blood cell volume, anisocytosis and poikilocytosis ran parallel to the average diameter. In boys at puberty the average diameter was slightly larger than that of the erythrocytes of the girls. Cell thickness was slightly increased during the 6 to 12 year period. After puberty (most marked in the 20 to 40 year group) the red blood cell count and hemoglobin percentage were higher in men than in women, although in old age the difference was not considered significant mathematically. The red blood cell diameter was largest during the first two weeks of life, smallest during the period of 2 months to 4 years and in the adult range after puberty. The monograph is illustrated with twenty-one graphs and twenty-six tables, and an extensive bibliography is appended. It is an excellent reference work on normal blood.

Practical Methods in Biochemistry. By Frederick C. Koch, Frank P. Hixon Distinguished Service Professor of Biochemistry, University of Chicago, Chicago. Third edition. Cloth. Price, \$2.25. Pp. 314, with 15 illustrations. Baltimore: William Wood & Company, 1941.

This edition of a laboratory manual for medical students carries forward the high ideals and scholarship of previous editions. New methods on uric, lactic and pyruvic acids are added. Extension to include qualitative and quantitative experiments on vitamins and hormones was considered but omitted because of the costly equipment necessary to insure results commensurate with the time and energy spent. This consideration of the student, in a field in which the author is a distinguished contributor, shows the soundness of his judgment and ideals: What cannot be done well, do not attempt. The author realizes that the student who brings much to a subject gets more out of it. He expects the user of the book to have sound fundamental training in chemistry, physics and biology. With this equipment this manual is well suited to guide him in biochemistry. The methods are given in clear and accurate terms. The illustrations of the more complicated apparatus are excellent and explanatory. The contents of the book are divided into three parts: (1) the chemistry of cell constituents, (2) the chemistry of the digestive tract and (3) blood and urine. The student who uses this manual as the instructions direct has every opportunity to become familiar with modern biochemistry. Those who wish a review in biochemical methods will find it a source of enlightenment.

Diseases of the Veins and Lymphatics of the Lower Extremity: A Manual of Veins and Lymphatics of the Lower Extremity for Students and Practitioners. By C. H. Verovitz, M.D., Demonstrator of Surgery, Western Reserve University School of Medicine, Cleveland. Cloth. Price, \$6. Pp. 392, with illustrations. Boston: Christopher Publishing House, 1941.

This monograph contains much valuable material and many useful diagrams described by an author with obvious clinical experience and a keen power of observation. The poor organization of the subject matter, the loose grammar, the faulty spelling of names and the careless list of references, with titles and journals frequently misquoted, greatly detract from the value of the book. With careful editing and better organization, future editions might provide easier and more profitable reading.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SULFONAMIDE DRUGS IN SINUSITIS

To the Editor:—I read in *The Journal* that a 5 per cent solution of sodium sulfathiazole is useful in the treatment of sinus trouble. I read later that this solution is alkaline and irritating. May I ask whether sulfanilamide or azosulfamide is effective as a spray when used in the same way and, if so, in what per cent solution? Are solutions of these irritating? Also I should like to ask whether sulfanilamide or sulfathiazole powder would be effective if blown into the nose with a powder blower, and, if so, whether it would be irritant or contraindicated in any way?

R. P. Little, M.D., New York.

ANSWER.—There is little evidence that a 1 per cent solution of sulfanilamide in physiologic solution of sodium chloride or that a 5 per cent solution of azosulfamide is of value as a spray or as an irrigating solution in the treatment of sinusitis. It is not likely that either solution would be irritating to the mucous membranes of the nose and throat. There are no reports concerning the introduction of sulfanilamide or sulfathiazole powder into the nose by means of a powder blower, although these drugs in a finely powdered form have been used as a medicinal snuff in attempts to eliminate hemolytic streptococci and staphylococci from the nasal passages. When these drugs have been used in this manner there have been mild degrees of irritation (such as slight itching and burning of the nasal mucous membranes and a watery discharge) noted. There are no extensive reports regarding the effectiveness of the powdered sulfanilamide or sulfathiazole in the control of sinus infections.

MANNITOL HEXANITRATE AS VASODILATOR

To the Editor:—It has recently come to my attention that mannitol hexanitrate is being advocated for use as a vasodilator in competition with erythrol tetranitrate, glyceryl trinitrate, sodium nitrite and even bismuth subnitrate. Where should one classify the usefulness of mannitol hexanitrate in comparison with other vasodilators and how does it compare with them in rapidity and duration of action?

David Stein, M.D., Philadelphia.

ANSWER.—All the compounds listed in the question depend for their action on the liberation of the nitrite ion within the body. This action consists in a relaxation of smooth muscle tissue and is independent of innervation. Mannitol hexanitrate has never come into general use in the practice of medicine despite the fact that it has been known as a vasodilator for many years and has been recently revived. The reasons for this are that it is inferior to glyceryl trinitrate (nitroglycerin) and amyl nitrite for quick effect and to sodium nitrite for intermediate effect (relatively slow initial but more prolonged action) and apparently is little or no better and no less toxic than erythrol tetranitrate for an effect that lasts for hours. Goodman and Gilman (*The Pharmacological Basis of Therapeutics*, New York, Macmillan Company, 1941, p. 552) have published a table listing the characteristics of the vasodepressor response of hypertensive patients receiving full therapeutic doses of certain preparations which release the nitrite ion in the body. The substance of this table can be summarized as follows:

	Fall Begins, Minutes	Maximal Fall Reached, Minutes	Extent of Fall,* Mm. of Mercury	Time of Recovery, Minutes
Amyl nitrite.....	½-1	2-3	15-25	4-8
Glyceryl trinitrate.....	1-2	5-10	15-30	25-40
Sodium nitrite.....	5-20	25-40	25-40	60-150
Erythryl tetranitrate....	15-30	30-50	30-40	180-300
Mannitol hexanitrate.....	15-30	60-120	30-40	240-360

* Systolic blood pressure.

It is true, however, that mannitol hexanitrate has not, at least in recent years, had the clinical trial that the other nitrites have had. Further experience might or might not reveal a value not now known; disappointment in the clinical applicability of erythrol tetranitrate suggests, however, the probability of similar disappointment in the practical use of mannitol hexanitrate.

TREATMENT OF TRACHOMA

To the Editor:—Will you kindly send me information on the treatment of trachoma with sulfanilamide? What other treatment is indicated?

Eleanor T. Calverley, M.D., Hartford, Conn.

ANSWER.—The treatment of trachoma with sulfanilamide and its congeners, originally described by Fred Loe of the Indian Medical Service, was said by Edward Jackson, the dean of American ophthalmologists, to be the greatest advance in the therapy of that disease in two thousand years. Interestingly enough, Loe's original technic of giving ½ grain (0.02 Gm.) of the drug by mouth per pound of body weight in twenty-four hours has never been improved on. Three courses of five to seven days each with an intervening rest period of three days suffice in nearly all cases. The blood level of sulfanilamide should be maintained during that time at between 3 and 4 mg., and naturally all precautions as to bodily health should be observed. No local treatment need accompany the internal use of the drug except a nonirritating cleansing solution to keep the conjunctival sac free from secretion.

Practically 75 to 90 per cent of cases of trachoma in stages 1 and 2 may be cured. Although there is an immediate relief of subjective symptoms, objective subconjunctival hyperplasias require from six weeks to six months to disappear and final judgment should not be passed until at least one year has elapsed. But of even greater importance than the cure is the fact proved by Thygeson that the disease cannot be transmitted after four days' use of sulfanilamide.

In stages 3 and 4 in which scar tissue contraction has occurred, brilliant results cannot be expected. Relief from secondary infection and relief from the pain of corneal trachoma are accomplished and the patient is made comfortable. The disease is no longer susceptible of transmission, but the usual local measures are necessary because of the scarring.

IONTOPHORESIS FOR FUNGUS INFECTION OF NAILS

To the Editor:—Has copper iontophoresis ever been used in the treatment of fungus infections of the toenails? What were the results?

M.D., London, Ky.

ANSWER.—Although Lowenfish treated 10 cases of dematophytosis by "cataphoresis" employing various fungicides, among which was copper, he concluded that the method was of "no value." Subsequent investigations by Haggard, Strauss and Greenberg and by Hoechstetter indicate that copper iontophoresis is valuable in treatment for fungus infections of the hands and feet.

Haggard and his associates found that 26 of 37 patients obtained "clinical cure"; and Hoechstetter, using the same method, reported that 16 of 18 cases of fungus infection of the feet were "clinically healed" following copper iontophoresis.

Gunderson reported that he employed iontophoresis only if other methods failed and said that his experience suggested that there were no contraindications to the use of copper iontophoresis. Gunderson recommended copper iontophoresis as the treatment of choice in stubborn cases and used it in preference to roentgen therapy. However, he resorted to the use of iontophoresis only if other methods failed.

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USE OF BLOOD FOR PREGNANCY TEST

To the Editor:—Would you tell me what are the comparative merits of using blood instead of urine for the Friedman test for pregnancy? I have in mind the Hofmann modification of the Friedman test, in which from 10 to 13 cc. of blood serum which has been extracted with ether is injected intravenously in the test rabbit, and autopsy performed in twenty-four to thirty-six hours. Reference to this test may be found in the *Journal of Laboratory and Clinical Medicine* 22:508 (Feb.) 1937.

T. T. Rackliffe, M.D., Los Angeles.

ANSWER.—The test referred to is a recognized procedure which gives excellent results. The advantages over the Friedman test are those of speed and availability of a sufficient amount of hormone in the blood at any time of day. With the serum recovered from about 12 cc. of blood, a result can be read macroscopically in twenty-four hours. The blood may be drawn at any time of the day without respect to meals or other factors, while in the urine test a morning specimen after restricting fluid intake for twelve hours is most satisfactory.

The only objection to the use of serum is that there is a greater chance of obtaining a toxicity from this material. Because of this there may be a higher rate of mortality among the test animals, probably as a result of protein shock from the serum used. The washing of the serum with ether is a step in the reduction of test animal mortality, as the ether acts to detoxify the serum.

Details of the technical procedure involved may be found in *Clinical Laboratory Methods and Diagnosis* by R. B. H. Gradwohl, published by the C. V. Mosby Company.

SYPHILOPHOBIA OR SYPHILIS WITH NEGATIVE SEROLOGIC REACTIONS

To the Editor:—Please inform me whether any cases of syphilis in which the serologic reaction is persistently negative are known and how they may be explained. I have a syphilophobe under treatment whom I am trying to convince that he is free of the disease but who persists in believing that his is a rare case because the reaction of the blood serum is consistently negative, a condition which I had to admit is theoretically possible although I have never seen it. To the best of my knowledge a consistently negative Wassermann, Kahn or Kolmer reaction, or preferably a combination of these, is, in the absence of clinical symptoms of syphilis, positive proof of the absence of syphilitic infection.

R. W. Mueller, M.D., Los Angeles.

ANSWER.—Yes, it is possible for a person with syphilis to have a persistently negative serologic reaction. So-called burnt out tubercles is a good example of this. Unfortunately, there is not enough information on this patient to assist much in formulating an answer. Did the patient ever have syphilis? That is the first thing to decide. If the patient has had a consistently negative Wassermann, Kahn or Kolmer test, or a combination of these, with an absence of clinical symptoms of syphilis, then there seems to be no reason why he should be treated.

On the other hand, if the patient has had syphilis, then he must have had sufficient continuous therapy, with alternating courses of an arsenical and of a bismuth compound for a year to eighteen months; his blood serologic reactions must have been negative for at least a year; lumbar puncture must give negative results, and the examination of the cardiovascular system must show no evidence of syphilitic involvement in order to warrant the stopping of therapy.

Unfortunately, the physician does encounter patients with syphilophobia who will take treatment just as long as they can get the physician to give it to them. Such patients are really a problem for the psychiatrist.

PROGNOSIS IN PAROXYSMAL TACHYCARDIA AND QUINIDINE

To the Editor:—1. A man of 22 has had attacks of paroxysmal auricular tachycardia since the age of 12, now occurring about once a week. These attacks he controls by holding his breath and bending over. Physical examination is essentially negative except for his excessive height, 6 feet 4 inches (193 cm.), and low weight, 145 pounds (66 Kg.). There is no past history suggestive of any etiologic factors for heart disease on physical examination or from his system review. Would you please tell me if I am correct in giving him a good prognosis?

M.D., Massachusetts.

2. A woman of 29, otherwise in good health, has had disturbing attacks of paroxysmal auricular tachycardia, confirmed by electrocardiogram, for about four years. At first these were as frequent as ten or fifteen a day, but she has responded well to quinidine, 20 grains (1.3 Gm.) daily. She has two bad wisdom teeth, which may have a bearing on the condition. She has asked me whether she will ever recover completely from the attacks, and I have been unable to find any answer to her question. When this arrhythmia is present without other illnesses (that is, in healthy young adults), what is the likelihood of spontaneous cessation of attacks, and does medication such as quinidine (which controls this patient's attacks) have any permanent effect in stopping the attacks?

E. C. Heyde, M.D., Wooster, Ohio.

ANSWER.—1. From the facts given it would appear that a good prognosis is entirely warranted. There is a fair likelihood that the number and severity of the patient's attacks will decrease as the years pass, but even if this does not occur they will probably not prove incapacitating.

2. A fairly large number of young patients with paroxysmal tachycardia who are otherwise healthy recover spontaneously. Reliable figures are not available, in part because many such patients probably fail to come under the care of physicians. There is no evidence that quinidine has any permanent effect in stopping the attacks. In some patients so treated the attacks do not recur after cessation of therapy, but as indicated the tendency frequently stops spontaneously and the efficacy of the quinidine cannot be proved. In this connection, because quinidine acts by virtue of being a protoplasmic poison, it would seem wise to stop it at intervals in the hope that spontaneous recovery may have occurred. This is especially true if as much as 1.3 Gm. of quinidine a day is necessary to control the attacks.

KNOCK KNEES IN YOUNG CHILD

To the Editor:—Can you please give me information on the treatment of knock knees in a child of three years and eight months? The condition is of rachitic origin. The child has been receiving 10 drops of percomorph liver oil twice daily since July, 1939. At times he urinates too frequently; should the dose be decreased? His height is 41¼ inches and his weight is 48 pounds. Is it possible that the deformity will decrease as the leg lengthens?

M.D., Canada.

ANSWER.—If the knock knee is not produced by some generalized disturbance such as rickets or osteodystrophy the treatment would depend to some extent on the severity of the deformity. If the deformity is mild a slight change in the weight-bearing thrust obtained by applying Thomas heels wedged ⅜ inch (0.48 cm.) on the inner side of the shoes will frequently bring about gradual correction. If there is evidence that the percomorph liver oil is causing some renal irritation, it would be well to change to some other form of vitamin D. Massive doses are not indicated unless there is evidence of a real rachitic change in the bone. If the deformity is severe, osteotomy of the lower end of the femur or the upper end of the tibia, depending on where the malalignment is most evident, would be justifiable. It is impossible to state whether the knock knee tendency will improve or increase as the thigh lengthens without knowing more about what has caused it. In the average patient mild knock knee can be corrected, however, with the simple shoe correction in addition to a maintenance dose of vitamin D.

REHABILITATION OF THE DEAF

To the Editor:—I note in the St. Louis press the recent death of Dr. M. A. Goldstein. Dr. Goldstein established the Central Institute for the Deaf, in embryo, about twenty-five years ago. It has grown to be a successful school. I have been out of the practice of medicine for at least ten years and have not kept pace with the latest advances in restoring the hearing in those congenitally deaf or the victims of such resistant and intractable afflictions as otosclerosis or traumatic deafness. Will you please tell me just what supposed permanent advancement in otologic science Dr. Goldstein is credited with—whether physiologic, electric or mechanical? The St. Louis press leaves one to understand that originality and creativeness are involved in the methods in use in the institute.

M.D., Louisiana.

ANSWER.—Dr. Goldstein's interest and activities were directed chiefly toward the teaching and rehabilitation of the deaf person rather than to the treatment of deafness. He originated no methods of "restoring hearing in the congenitally deaf or in those afflicted with otosclerosis or traumatic deafness." His views on the management of the deaf child are expounded in Goldstein, Max Aaron: *The Acoustic Method for the Training of the Deaf and Hard of Hearing Child*, St. Louis, Laryngoscope Press, 1939.

CONTROL OF HEMORRHAGE AFTER TONSILLECTOMY

To the Editor:—I have heard that equal parts of gallic acid and tannic acid are good to control hemorrhage with after tonsillectomies. Is this true, and, if so, what strength of the two acids is used?

Joseph P. Sparks, M.D., Manito, Ill.

ANSWER.—It is true that gallic and tannic acids are useful in the control of hemorrhage after tonsillectomy. They should be used, however, only for the control of minor hemorrhage. Severe bleeding from large vessels should be handled as it is in other branches of surgery, namely by means of pressure, clamping and the ligature.

A 1 ounce medicine glass is filled with gallic acid or tannic acid crystals, separately or in equal amounts, and enough epinephrine hydrochloride 1:1,000 in physiologic solution of sodium chloride should be added, drop by drop, until a paste of the consistency of mustard is obtained. The whole should be stirred as it is prepared. Tannic and gallic acids are easily soluble in this solution and too much should not be used, as the mixture then becomes too thin for efficient action.

PREGNANCY AND MÉNIÈRE'S DISEASE

To the Editor:—A woman aged 29 has been under my care for Ménière's disease for the past one and one-half years. Treatment with a low sodium Fürstenberg regimen, ammonium chloride and the use of histamine acid phosphate intravenously, as used at the Mayo Clinic, have been successfully employed. The patient has a child 5 years of age, having had a pregnancy five years ago that terminated normally and spontaneously. She is desirous of having another baby. Will this have a detrimental effect on the Ménière's disease?

M.D., New York.

ANSWER.—While any metabolic disturbance may cause an exacerbation of Ménière's disease, if the patient has been free from symptoms for some time there is not a great likelihood of trouble from pregnancy. Ménière's disease tends to run a self-limited course, and the patient may now be past the stage of severe attacks of vertigo.

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TREATMENT OF ACUTE NEPHRITIS

THE IMMEDIATE RESULTS AND THE OUTCOME
TEN YEARS LATER IN EIGHTY-NINE CASES

FRANCIS D. MURPHY, M.D.

AND

BRUNO J. PETERS, M.D.

MILWAUKEE

If the problem of acute nephritis were limited in its scope to the acute episode, the subject would be a comparatively simple one. But this is not the case. While it is not unanimously believed that chronic glomerular nephritis evolves from an unhealed acute attack, this is an opinion widely held. During the past ten years observations by many investigators¹ have been made on the relationship of the acute phase to the chronic form, and there seems to be sufficient evidence to substantiate the assumption that chronic glomerular nephritis is a remote consequence of acute nephritis which failed to heal completely.

There are many obstacles in establishing the proper correlation between the acute and the chronic stage of nephritis. Among them is the difficulty of convincing the patient of the need of reexamination in the years after the acute phase is over and before symptoms of chronic nephritis begin. During the period of transition between the acute and the chronic stage the patient may appear and feel well and no medical attention may be considered necessary, yet the nephritis may be gradually destroying the renal units. Then too the physician who sees the patient years later, when the chronic form sets in, is apt not to be the one who studied him in the initial period of the disease. This is particularly true when acute nephritis occurs in children.

Not until recent years have methods been devised to determine the presence of a minimal unhealed lesion in the kidney. Before the method of Addis² was employed and prior to the use of such tests as determination of the sedimentation rate of the erythrocytes and the blood urea clearance test, the presence of latent nephritis was largely overlooked. It is in the latent

or transitional period, when the patient appears normal and seems cured but in fact is not, that the key to the correlation between acute and chronic nephritis is found.

In the last decade the number of after-studies of patients with acute nephritis has been growing steadily. These observations have been responsible to a large extent for the modern concept of acute nephritis, which is that not all the classic syndromes of hematuria, edema, hypertension and albuminuria are required before a diagnosis of acute nephritis can be made. Milder forms are being recognized and treated adequately in an increasing number of cases. Simple methods have been devised which aid greatly in determining whether the renal lesion has healed or is remaining active after the acute phase is supposedly over.

In reports dealing with the ultimate prognosis of acute nephritis great divergence of opinion is shown. Some authors³ have reported that complete recovery is the usual course, with chronic glomerular nephritis following only rarely, while others⁴ have expressed the belief that chronic nephritis is a fairly common consequence in later years. How statistics may vary in this regard is shown by Snoke⁵ in his follow-up study comparing the prognosis in a series of cases at Stanford University School of Medicine with that in a series at the University of Rochester School of Medicine and Dentistry.

ANALYSIS OF THE PRESENT SERIES

Our report is concerned with 205 patients with acute nephritis studied in the initial stages at the Milwaukee County Hospital and kept under observation for two to ten years afterward. The series includes both adults and children who were studied in the hospital for three months to a year and were observed at regular intervals at the outpatient clinic during the years that followed.

Our interest was focused particularly on 89 patients who recovered from the initial stage of acute nephritis satisfactorily but continued to have evidence of activity

From the Department of Medicine, Marquette University School of Medicine, and the Clinics, Milwaukee County Hospital.

Read before the Section on Pharmacology and Therapeutics at the Ninety Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

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5. Snoke, A. W.: Prognosis in Glomerular Nephritis in Childhood, *Am. J. Dis. Child.* **57**: 1373 (June) 1939.

of a renal lesion for months afterward. After discharge from the hospital, these patients were readmitted for study at regular intervals when it was thought advisable. Check-up examination included daily urinalysis of the twenty-four hour specimen, examinations of the urinary sediment by the method of Addis, blood urea clearance tests, determinations of the sedimentation rate, blood cell counts and determination of the blood pressure twice daily.

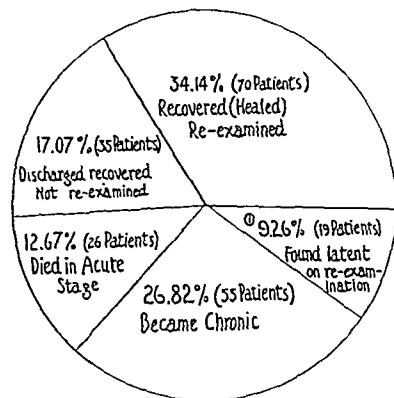


Chart 1.—Outcome in 205 cases of acute nephritis studied during a ten year period.

nation, but we assume rightly or wrongly that they remained in the state of recovery. The patients who died in the acute stage and those whose disease became chronic within a year, as well as those who did not return for reexamination having been eliminated, there are 89 whose careful follow-up study is the chief topic of this paper.

Forty-one, or 46 per cent, of these 89 patients were considered cured, but 6 later showed evidence of latent nephritis (charts 2 and 3). Forty-eight, or 53.9 per cent, had some evidence of renal inflammation (latent nephritis) at the time of discharge. Thirteen, or 27 per cent, of these continued to have latent nephritis. Fifteen had an excessive number of red blood cells in the urine. A follow-up study of these 15 showed that eventually 10, or 66.6 per cent, were healed completely and that the remaining 5, or 33.3 per cent, continued to have evidence of an active renal lesion. Of the group of 48, 18 were dismissed from the hospital with both albumin and an excessive number of red blood cells in the urine. Four, or 22.2 per cent, of them continued to show an active renal lesion. Fifteen of the 48 were discharged with a trace of albumin but no red blood cells or casts in the urine, and 4 of these, or 26.6 per cent, continued to show activity of the renal lesion. Therefore, when the ultimate result in the 205 patients is considered, there were 70 patients, or 34.1 per cent of the total series, with complete recovery, and 19, or 9.2 per cent, found on reexamination to have latent nephritis. Thirty-five, or 17 per cent, were discharged as completely cured but failed to return for reexamination. If these figures are corrected and the patients not returning for examination are excluded there is an amended figure of 41 per cent for patients completely healed. If the patients with chronic and those with latent nephritis are grouped approximately 36 per cent have an unhealed renal lesion. Also, if this figure is corrected to exclude the patients not returning for examination, a resulting 43.5 per cent of our patients still have an active lesion.

Age and Sex Distribution.—The age and sex distribution in 89 cases of acute nephritis is given in table 1 and chart 4, and this distribution is made the

object of a special study in table 2, in which 19 patients with nephritis in the latent stage are compared with the 70 cured patients who had acute nephritis. In our series 58 patients were male and 31 female. Of the 19 patients with latent nephritis 14 were male and 5 female. From table 1 it may be seen that most of our patients were adults, and in the greatest number the disease occurred between the ages of 10 and 20 years. In 14 it occurred between the ages of 20 and 30 and in 14 others between 30 and 40. It may be seen in table 2 that latency predominated in the group of patients aged from 10 to 20 years.

Etiology.—In tables 3 and 4 the diseases that preceded the acute nephritis in the 89 cases are listed. As in almost all other reports, infections of the upper respiratory tract constituted the chief offender. As far as we could make out, the type of preceding acute infection had little or nothing to do with the prognosis. Sometimes acute nephritis comes on within a few days of the onset of the preceding disease, but most often the first evidence of nephritis develops from seven to fourteen days after the onset of the acute infection. The period of lapse between the onset of the acute disease and the occurrence of nephritis appears to make little difference in the ultimate outcome.

THE CLINICAL COURSE

No attempt was made to classify our cases into various groups according to the intensity of one clinical feature or another. We believe that there is but one acute nephritis and that there is no advantage in further subdividing the series. Acute nephritis may develop abruptly, displaying all the classic textbook features, such as hypertension, edema and hematuria, or it may come on so insidiously that it may escape notice entirely unless the urine is examined and evidence of renal involvement found. The mild type seems innocent at first, but the benignity is more apparent than real, for the ultimate outlook for the patient with mild nephritis is no better than that for the patient with a more severe form of the disease.

The clinical manifestations of acute nephritis may be few or many. In our study we have classed these clinical features in five main syndromes and have studied them routinely in each case. They are (a) the urinary syndrome, (b) edema, (c) hypertension, (d) retention of nitrogenous products in the blood and (e) uremia, genuine or convulsive. These syndromes all may be present in a patient at the same time, or one syndrome may occur, dominate the clinical picture for a brief

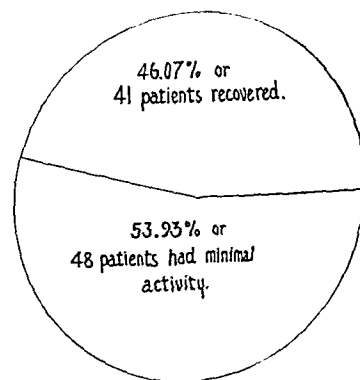


Chart 2.—Condition of 89 patients at time of discharge.

period and then disappear entirely, only to return at a later period or perhaps never to return. In table 5 the various syndromes are listed and the combination of them appearing in the 89 cases is given. The number of times that each syndrome occurred is incorporated in table 6.

(a) *The Urinary Syndrome.*—The urinary syndrome occurred alone in 25 instances and it was present in every one of the 89 cases. A simple, careful study of the urinary syndrome is without doubt most important, because its significance is least likely to be misinterpreted and it is present in every case. The occurrence of the urinary syndrome alone is worthy of more

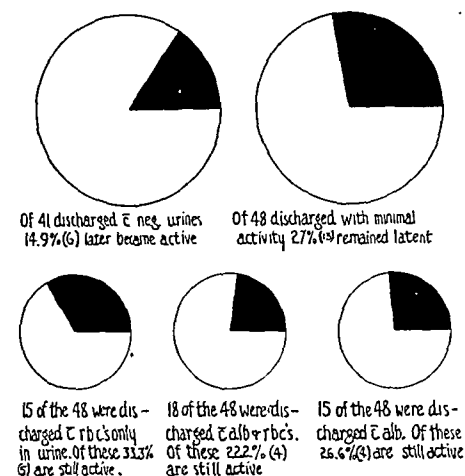


Chart 3.—Data on urine in 89 cases at time of discharge.

thought, because often the examination of the urine is neglected unless other evidences, such as hypertension, edema and hematuria are found. Some cases of acute glomerular nephritis have been reported⁶ in which albuminuria was absent for a time after other evidences, such as hypertension and edema, appeared. We did not observe such cases in this series.

(b) *Edema.*—Although edema in acute nephritis may result from heart failure as well as from the nephritis, our figures for the incidence of edema in acute nephritis refer entirely to renal edema and not to the kind that comes from heart failure. Edema marks the onset of acute nephritis in some cases. Its importance lies to a large extent in the fact that it serves to bring to the attention of the medical attendants of the patient the possibility of a renal lesion or involvement of the kidney. Although some observers look on edema as a grave sign, usually it is innocent. We failed to find that patients with edema fared worse than patients without it. This statement does not hold for the edema that occurs in the period following the first few weeks of acute nephritis. When edema develops after the first weeks, it usually signifies that the nephritis is going into the degenerative or subacute or chronic phase, and its prognostic significance is important. Edema alone with the urinary syndrome occurred 11 times, and of 89 cases edema was present in 42.

(c) *Hypertension.*—Of 89 cases, hypertension occurred in 33. It was the only syndrome besides the urinary syndrome in 6 cases. Formerly hypertension was considered a constant feature of acute nephritis, but this idea is no longer held. Hypertension may be lacking throughout the entire course of the disease. Its onset in the course of acute nephritis, however, is significant. Although the patient with acute nephritis may progress unfavorably without hypertension, its onset is always a discouraging and sinister event. When

hypertension develops in the latent stage of nephritis, as it often does, the chances of complete healing may be given up in almost every case.

(d) *Nitrogen Retention.*—Elevation of the nonprotein nitrogen content occurred in 30 cases and alone with the urinary syndrome in 8 cases of the 89. In the early period of acute nephritis a rise in the blood urea nitrogen level is of little significance, but when it occurs after the first ten days its presence causes great concern, because it indicates that the kidneys are not functioning as well as they were in the beginning, and the prognosis becomes doubtful. As a guide in the diagnosis of acute nephritis a study of the blood urea nitrogen content is not important, but as a prognostic indicator it is useful after the first ten days or two weeks of the disease.

(e) *Uremia.*—Genuine uremia occurred two times without any of the syndromes other than the urinary syndrome. Genuine uremia is the direct outcome of renal insufficiency and is entirely independent in origin of the convulsive seizures which may be associated with it. A rise in the blood urea nitrogen level is the precursor of uremia in most instances, and it is involved in the development of this syndrome. Any condition which interferes with the urinary output may lead to genuine uremia. The convulsive seizures may occur in connection with genuine uremia but are not dependent on renal insufficiency. The convulsions are associated with edema of the brain and usually are precipitated by acute hypertension. In 2 cases in this series convulsive seizures occurred without hypertension, but in most instances a diastolic pressure of 120 mm. of mercury, edema of the optic disks, fresh hemorrhages and fluffy white patches accompany convulsions. The pressure of the spinal fluid in convulsive uremia is usually increased from the normal of 150 mm. of water to 300 mm. While patients in whom genuine uremia develops hardly ever recover, it cannot be said that they never do so. The outlook is entirely different with the so-called convulsive type of uremia, which frequently clears up and appears to have little or nothing to do with the chances of a rather long life afterward. The prognosis of uremia, whether genuine, convulsive or compound, depends on the functional ability of the kidney and the persistence of the hypertension rather than on any one of the other numerous signs and symptoms.

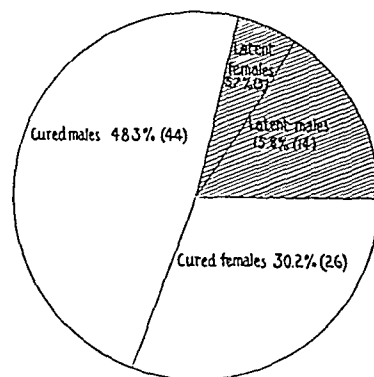


Chart 4.—Distribution according to sex of 89 patients with acute nephritis. Shaded area represents patients who went into a latent stage.

6. Fishberg, A. M.: *Hypertension and Nephritis*, ed. 3, Philadelphia, Lea & Febiger, 1934, p. 468.

PROGNOSIS AND THE LATENT PERIOD

After the acute episode is over, whether it is mild, moderate or severe, there is a variable period of two months to two years in which some patients appear well but on careful examination of the urine show evidence of an inflammatory lesion in the kidney. This is called the latent period. It is characterized by a complete absence of clinical evidence of nephritis and

by albuminuria and an excessive number of red blood cells, white blood cells and granular casts in the urine. It is an important phase of the disease, because during it the ultimate fate of the patient is often determined. Lack of proper consideration of this symptomless period

TABLE 1—Age and Sex in Eighty-Nine Cases of Acute Nephritis Followed for One to Ten Years

Age Group	Male	Female	Totals
0 10.	18	4	22
11 20	25	11	36
21 30	5	9	14
31 40	9	5	14
41 50	1	1	2
51 60	0	1	1
Totals	58	31	89

was considered by Snoke⁵ to be responsible for conflicting views on the prognosis of acute nephritis. To this opinion we readily subscribe, as our previous observations⁴ showed that failure to interpret data correctly in this period leads to faulty conclusions.

In this period of transition the kidney may gradually heal completely or the disease may progress into chronic nephritis. It may be difficult to say when the latent period is over and chronic nephritis begins, as the latent phase may merge gradually with the chronic form, but usually after two years the disease may be classed as chronic. Addis,² who was the first to study this latent phase adequately, observed that patients may remain in it for as long as ten years apparently in perfect health but always with an abnormally high number of red blood cells and a few blood casts.

More rigid adherence to the rules of treatment at this time may accelerate complete recovery, while laxity may retard healing. It is difficult to determine whether the renal lesion is healing or becoming chronic. The tests of renal function usually employed are insufficient for this purpose. It is essential to determine the degree of activity of the lesion in the kidney and by repeated examinations to observe whether healing or inflammation is gaining the ascendancy.

TABLE 2.—Age and Sex of Nineteen Patients with Latent Nephritis and of Seventy Patients Cured of Nephritis

Age Group	With Latent Nephritis		Cured	
	Male	Female	Male	Female
0 10.	1	1	17	3
11 20	9	3	16	8
21-30	1	1	4	8
31-40	2	0	7	5
41 50.	1	0	0	1
51 60	0	0	0	1
Totals	14	5	44	26

Several methods have been used in obtaining this information, and we believe that a combination of the results of these tests forms a better prognostic guide than the results of any one test taken alone. To learn which course the disease is taking in a given case requires more than a single examination. Reliable data are dependent on these tests done not once but many times. We have employed the following procedures in most of our cases, and while not all the tests are

of uniform importance we believe that all are good prognostic aids.

1. A count of the casts and cells in the urinary sediment by the method of Addis was the greatest aid of all. This test was done at regular intervals, depending on the nature of the case.

2. A study of the ability of the kidney to concentrate urine (Volhard's method) was found reliable. Progressive impairment of concentration pointed to a progressive unhealed lesion.

3. The blood urea clearance test has been used regularly in our cases, and we believe it has been helpful. When the urea clearance is low at the beginning and improves in time the outlook for the patient is good, but when repeated examinations show a tendency toward a drop in the percentage the outlook is unfavorable.

TABLE 3.—Cause of Acute Nephritis in Eighty-Nine Cases

	Number of Cases
Infection of upper respiratory tract	72
Pneumonia.	3
Scarlet fever.	2
Streptococcal meningitis.	1
Purpura.	1
Influenza.	1
Gastroenteritis.	1
Ruptured appendix.	1
Undetermined cause	7

TABLE 4.—Cause of Acute Nephritis in Nineteen Cases in Which the Disease Was in the Latent Stage

	Number of Cases
Infection of upper respiratory tract	12
Pneumonia.	1
Scarlet fever.	2
Streptococcal meningitis.	1
Purpura.	1
Ruptured appendix.	1
Undetermined cause	1

4. While not a basis for determining precisely the progress of the renal lesion, anemia that fails to respond satisfactorily to ordinary therapeutic measures, such as the administration of iron and vitamins, indicates that the renal lesion is probably becoming worse.

5. Estimations of the plasma proteins are important prognostically even though the plasma albumin does not drop to the critical level of 2 Gm. per hundred cubic centimeters. It is important to remember that a lowered plasma albumin content, for example 3 Gm. per hundred cubic centimeters, and a value for total protein of less than 5 Gm. per hundred cubic centimeters point to an unfavorable prognosis.

6. Finally, we have come to look on determination of the erythrocyte sedimentation rate as a valuable aid in prognosis (chart 5). While we cannot say that it is always accurate as a prognostic measuring stick, it nearly always is. We have employed this test for fifteen years in our clinic, and we believe that in general a rapid sedimentation rate indicates that an unhealed lesion is becoming progressive. A slowing down of the sedimentation rate points to a subsidence of the inflammation, while a normal rate points to a healed or almost completely healed lesion.

TREATMENT

That rest is valuable for the patient in general and for the kidney in particular is the first principle in the treatment of nephritis. In this paper we are concerned primarily with the treatment of the patient after

TABLE 5—Syndromes in Eighty-Nine Cases of Acute Nephritis

	No of Cases
Urinary syndrome alone	25
Urinary and hypertensive syndromes	6
Urinary syndrome and edema	11
Urinary syndrome and elevated nonprotein nitrogen level	8
Urinary syndrome, elevated nonprotein nitrogen level and hypertensive syndrome	3
Urinary syndrome, elevated nonprotein nitrogen level, hypertensive syndrome and edema	5
Urinary syndrome, hypertensive syndrome and edema	12
Urinary syndrome, elevated nonprotein nitrogen level and edema	8
Urinary syndrome, elevated nonprotein nitrogen level, edema and hypertensive and convulsive syndromes	4
Urinary syndrome, edema and hypertensive and convulsive syndromes	2
Urinary and uremic syndromes	2
Urinary, uremic and hypertensive syndromes	1
Urinary syndrome, elevated nonprotein nitrogen level and convulsive syndrome	2

the acute stage is over. Our results, especially in adults, emphasize the importance of keeping the patient in bed for several months if necessary after the clinical features have passed and until the last remnants of nephritis have disappeared. In chart 3 it may be seen that the 41 patients who were cured were those who remained in the hospital until well and that the 48 who left the hospital before cure was accomplished fared less well eventually. We grant that such prolonged enforced rest may be difficult in some cases because occasionally younger patients, their parents and unfortunately the medical advisor fail to recognize the need of it. But the end does justify the means in these instances. We enforce modified bed rest for four months; we believe that after this rigid adherence to inactivity fails to accomplish our purpose, since a chronic condition probably has set in, and rest is no longer enjoined.

Physical inactivity serves to obtain rest for the circulation, lessens the demand for food and metabolic activity and materially reduces the work of the crippled kidney. Rest for the kidney in particular is accom-

TABLE 6—Incidence of Syndromes in Eighty-Nine Cases of Acute Nephritis

Syndrome	Urinary	Hypertensive	Edema	Elevated Nonprotein Nitrogen Level	Uremia	Convulsions
Number of cases	89	33	42	20	3	8

plished by regulation of the diet. This must not be taken to mean that the diet is inadequate. The daily protein intake should range from 0.75 to 1 Gm. per kilogram of body weight. Some patients may do well with less, and others may do better with a larger amount of protein. Protein starvation may spare the kidneys at the expense of the economy of the body in general, which is as bad as giving too much protein and retarding recovery of the renal units. From the experimental

work of Addis,⁷ Farr and Smadel⁸ and Chanutin and Ferris⁹ we note that the injured kidney heals faster when a low protein diet is given and slower or not at all when a high protein diet is given. The relative rest for the kidney conferred by a low protein diet is the factor considered important. Although experimental observations cannot be transferred wholly to clinical practice, reports from many quarters of good results with a low protein diet tend to substantiate this impression. Yet other investigators have expressed the belief that a high protein diet is not injurious to patients with acute nephritis. Keutmann and McCann¹⁰ found that a high protein diet did not retard healing and that the return of renal function was accelerated. Naeraa¹¹ followed a number of patients with acute nephritis, making Addis counts, and came to the conclusion that a high protein diet is not harmful to the kidney. Mosenthal¹² and Cameron¹³ both expressed the belief that a strictly low protein diet does not spare the kidney and that judging from their experience there is no need to fear that protein is injurious to the kidney

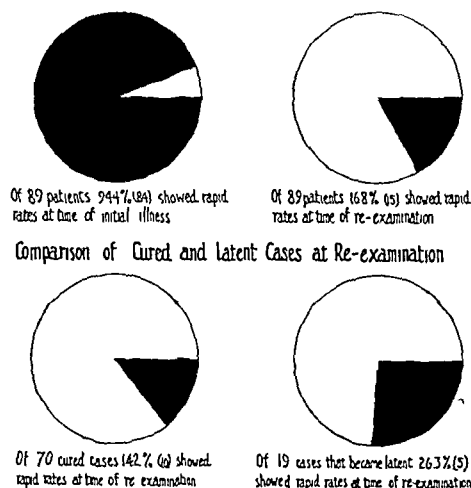


Chart 5—Sedimentation rate of 89 patients with acute nephritis

in nephritis. Protein starvation, they said, is more likely than protein excess to harm the patient.

We believe that our diets containing 0.75 to 1 Gm. of protein per kilogram of body weight represent neither starvation nor an excess of protein but fulfil the protein requirements of the patient adequately and yet do not retard healing.

We¹⁴ compared the high acid ash diet and the high alkaline ash diet in a series of cases of acute nephritis

7. Addis, Thomas: Osmotic Work of Kidney and Treatment of Glomerular Nephritis, *Tr. A. Am. Physicians* 55: 223, 1940

8. Farr, L. E., and Smadel, J. E.: Influence of Diet on the Course of Nephrotic Nephritis in Rats, *Proc. Soc. Exper. Biol. & Med.* 36: 472 (May) 1937

9. Chanutin, A., and Ferris, E. B., Jr.: Experimental Renal Insufficiency Produced by Partial Nephrectomy. I. Control Diet, *Arch. Int. Med.* 49: 767 (May) 1932

10. Keutmann, E. H., and McCann, W. S.: Dietary Protein in Hemorrhagic Bright's Disease. I. Effects upon the Course of the Disease, with Special Reference to Hematuria and Renal Function, *J. Clin. Investigation* 11: 973 (Sept.) 1932

11. Naeraa, A.: Kvantitative Urinsedimentbestemmelser: Et Bidrag til Belysning af Proteinspørgsmålet ved Nefritisdiaeten, Copenhagen, Nyt Nordisk Forlag Arnold Busck, 1936

12. Mosenthal, H. O.: Treatment of Nephritis, *Ohio State M. J.* 35: 1049 (Oct.) 1939

13. Cameron, J. D. S.: Protein in Treatment of Nephritis (Honyman Gillespie Lecture), *Edinburgh M. J.* 46: 386 (June) 1939

14. Murphy, F. D., and Pietraszewski (Peters), B. J.: The Effect of Acid Ash and Alkaline Ash Diets in the Treatment of Acute Glomerulonephritis, *Internat. Clin.* 1: 3 (March) 1940.

and found that as far as healing in the early stages is concerned there appears to be little or no difference. In cases of latent nephritis in which treatment is continued over longer periods the results are about the same as those mentioned.

The problem of giving salt and water during the healing phase is not a difficult one. Simple restriction of sodium chloride to an average quantity of 5 to 6 Gm. daily is sufficient. The intake of fluid should be tempered according to desire, but excesses should be guarded against. As to vitamins, it is essential to give sufficient amounts of A, the B complex, C and D. These are easily given before meals. While it is difficult to prove satisfactorily that the administration of iron is advantageous, in practice it has been shown to be helpful.

The theory advocating the removal of foci of infection in the treatment of nephritis has lost some of its popularity, but we believe such foci should be removed. Diseased tonsils, foci of infection in sinuses, apical abscesses or abscesses anywhere should be removed about one month after the passing of the acute episode. While statistics may fail to provide evidence of the benefit of such removal, the individual patient often shows striking benefit.

COMMENT

The ultimate prognosis rather than the immediate outcome of acute nephritis has been our chief interest for some time. Why some patients who have recovered from acute nephritis are completely healed and others progress gradually into the stage of chronic nephritis is an unsolved problem. There seem to be some factors, however, which influence the course of the disease. In our review of the cases in this series we have attempted to determine what factors accelerated or retarded the complete healing of the renal lesion.

We were impressed particularly by the fact that the lesion which failed to heal immediately tended to do so eventually if rest and careful attention to simple regulations of treatment were adhered to.

The acute phase of nephritis was observed to be the forerunner of the chronic form in a sufficient number of cases to convince us that the relationship is more than coincidental. We believe that the failure to understand the significance of the latent phase is one of the main stumbling blocks in the recognition of the relationship between the acute and the chronic form. Rigid adherence to the regimen of rest when there is even slight activity of the renal lesion helps bring about complete recovery. The intensity of the initial stage of acute nephritis has little or no bearing on the ultimate outcome, but the duration of the disease which precipitates the acute nephritis may often have an effect on the ultimate outcome of the renal lesion. While in itself the age of the patient is probably not an important factor in prognosis, in our series the persons aged 10 to 20 years got along less well than those in the other age groups. The retarding of recovery is due not so much to the age as to the fact that patients at this time of life are more difficult to control and are less amenable to treatment.

The prognosis in various series of cases depends on factors that are not often mentioned. For example, patients in a large charity hospital are apt to be admitted for treatment after a delay of some weeks

following the onset of the acute stage. It is more difficult to convince patients who come to such an institution of the importance of rigid treatment when they feel no pain or distress of any kind. Judging from Snoke's⁵ comparative study of cases in San Francisco and in Rochester, N. Y., it may be said that the geographic location may be one of the deciding factors in prognosis.

Many reports have shown a uniformly good prognosis in acute nephritis. Ludbrook¹⁵ stated that 97 per cent of the 60 patients with acute nephritis in his series followed from one to six years were entirely cured at the time he wrote. Aldrich,¹⁶ Blackfan,³ Richter⁴ and Tallerman and Burkinshaw³ expressed the view that most patients make a complete recovery. In an after-study of acute nephritis among soldiers in the first World War, Keith and Thomson¹⁷ gave a favorable report concerning the ultimate outcome; yet they emphasized that the prognosis as to complete recovery must be guarded.

Our observations, both of the present and of former series,¹⁸ do not support the contention that nearly all patients with acute nephritis recover completely. Still,¹⁹ Snoke,⁵ and Folkers²⁰ have reported series of cases in which the ultimate outcome was not favorable. Longcope²¹ followed 134 patients for one to fourteen years and reported 42.5 per cent with healed, 33 per cent with latent and 11.2 per cent with chronic nephritis, while 14.2 per cent had died.

SUMMARY

1. Of 205 patients with acute glomerular nephritis observed from two to ten years, including both adults and children but mostly adults, 55, or 26.8 per cent, acquired chronic nephritis; 26, or 12.6 per cent, died in the acute stage, and 19, or 9.2 per cent, entered the latent stage. Thirty-five, or 17 per cent, although clinically cured at the time of discharge did not return for reexamination. Seventy patients, or 34.4 per cent, were completely cured. Correcting these figures to exclude the patients not returning for examination, we have an amended figure of 41 per cent for patients completely healed. If we group the patients with chronic and those with latent nephritis, approximately 36 per cent have some evidence of renal involvement; similarly, if this percentage is corrected 43.5 per cent of our patients still show latent or chronic nephritis.

2. The prognosis was found to be no better when the initial stage was mild than when it was severe or stormy.

3. The latent period is significant and should be emphasized, for in it the ultimate fate of the patient is often determined.

4. We do not believe that the prognosis of acute nephritis is as favorable as many investigators have reported.

536 West Wisconsin Avenue.

15. Ludbrook, S. L.: *Acute Nephritis in Childhood*, New Zealand M. J. 40:13 (Feb.) 1941.

16. Aldrich, C. A.: *Clinical Types of Nephritis in Childhood*, J. A. M. A. 94:1637 (May 24) 1930.

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18. These are listed in footnotes 1 and 4.

19. Still, G. F.: *Common Disorders and Diseases of Childhood*, ed. 5. London, Oxford University Press, 1927, p. 638.

20. Folkers, L. M.: *Acute Glomerular Nephritis: A Report of Sixty-Eight Cases*, J. Iowa M. Soc. 25:552, 1935.

21. Longcope, W. T.: *Some Observations on the Course and Outcome of Hemorrhagic Nephritis*, Internat. Clin. 1:1 (March) 1938.

ABSTRACT OF DISCUSSION

DR N M KEITH, Rochester, Minn. Drs Murphy and Peters' statistical results of cured cases are very similar to those of Hume and Nattress, who followed up cases of acute trench nephritis of the soldier after the great war in Newcastle, England. They found that of some 280 patients about 45 per cent were cured after a period of several years. Dr Longcope of Baltimore has also reported about the same number of cured cases in his series. That is an important fact and I believe that Dr Murphy and all of us will agree that we must and can have a larger percentage of cured cases. Apparently a great many of these patients leave the hospital too soon and after dismissal do not get the care they should. I think it is important, as Drs Murphy and Peters pointed out, that we must do our best in the latent stage to be sure that these patients are not still suffering from the disease. Dr Addis, I think, has done us a great service by instituting his test of counting the number of red cells present in the urinary sediment of these patients. Drs Murphy and Peters have mentioned the removal of foci. I believe, like Dr Longcope, that when there is an active focus it should be removed and, if possible, after the acute renal episode has subsided. Drs Murphy and Peters stated that they like to keep these nephritic patients in bed for four months. I do not think that there should be any arbitrary fixed rule, however, I believe it is better to err on keeping the patients too long than too short a time in bed. A patient of mine, a young man with acute nephritis with severe albuminuria, hematuria and hypertension, was given a diet such as the authors advocate. This man was an orderly in our hospital. We were thus able to watch him carefully and keep him in the hospital for approximately two months. He did well. It is eighteen months since his initial attack. What I want to bring up is that I am not certain yet that he is cured. He will have to be observed further, in spite of a normal urine, for albuminuria and hematuria, eighteen months after the initial attack of acute nephritis.

DR MOSES BARRON, Minneapolis. I agree with nearly everything the authors say in their paper on nephritis. Their statistics parallel those in the better clinics of the country. They quoted some authorities who give higher percentages in recoveries, some as high as 96 per cent. I think those high figures occur as a result of errors in diagnosis. Undoubtedly the milder forms of focal nephritis following many acute infections which usually go on to complete restitution are included in those statistics of glomerular nephritis. A much smaller percentage of cases of acute nephritis following scarlet fever pass into the latent or chronic state, probably only 5 or 7 per cent instead of 30 or 40 per cent. In acute diffuse glomerular nephritis about 10 per cent die in the acute stage. Death is due to acute infection, otitis media, pneumonia, uremia and occasionally heart failure. I wish to emphasize the importance of watching cases of nephritis for heart failure, since digitalis may prove life saving. The poor circulation from a failing heart may throw a not severe renal insufficiency into a fatal uremia. The first three or four days' diet should consist of a little fruit, orangeade, lemonade and a restricted fluid intake to a total of 300 to 500 cc. For the next few days a little more fruit and fluid may be added. Later small amounts of protein, starches and fats are gradually added until the proper caloric intake is provided. The protein should be increased to not more than two thirds of a gram of protein per kilogram of body weight. I agree with the authors that excessive protein in the diet is deleterious during the acute stages of nephritis. An increased amount of protein means increased work for the kidneys and this leads to greater damage to the already diseased kidneys. One must differentiate between hypertensive encephalopathy and true uremia which may accompany advanced stages of nephritis. The treatment of these two conditions is entirely different. Uremia is always associated with the retention of metabolic products in the blood as a result of renal insufficiency. The blood pressure in some instances may be normal. In hypertensive encephalopathy the blood chemistry may be entirely normal but the blood pressure is always greatly increased. The treatment of hypertensive encephalopathy is venipuncture, spinal puncture, magnesium sulfate by mouth and intravenously, and the prevention of convulsions by restriction of fluids and the use of morphine if necessary. I believe that treatment of

glomerular nephritis is most important in the acute stage. During the latent period there is little that one can do except advise against chilling. One cannot keep patients at absolute rest all the time. They should be watched for the first signs of an exacerbation and then again be subjected to the treatment applied in an acute case.

THE LOCAL USE OF SULFANILAMIDE
IN THE TREATMENT OF PERI-
TONEAL INFECTIONS

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AND

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Two years after the report of Domagk¹ in 1935 concerning the chemotherapeutic properties of azosulfamide, certain bacterial infections were commonly treated with sulfanilamide with excellent results. Given by mouth, by rectum or by hypodermoclysis at regular intervals, therapeutic blood and tissue concentrations could be maintained which had a definite bacteriostatic effect on certain organisms. In April 1937 Sinclair and Barker² departed radically from the usual plan of administration of sulfanilamide and for the first time made use of high local concentrations of the drug for the treatment of localized infections. They used crushed sulfanilamide tablets in dental surgery, such as for infected operative wounds in the mouth, certain extractions, compound fractures and osteomyelitis of the mandible—with good results in the prophylaxis and treatment of infections. In July 1939 Jensen, Johnsrud and Nelson³ reported a series of compound fractures treated with local implantation of sulfanilamide. In this series no instances of primary infection occurred. Other reports of its local use followed shortly and it soon became evident that, if proper amounts of the drug were used, toxic levels in the blood did not occur. On Jan 10 1940 sulfanilamide was first used intraperitoneally at the Roosevelt Hospital⁴ in a desperate attack of diffuse peritonitis. This critically ill patient made such a dramatic and unexpected recovery that it was used in other similar abdominal conditions with equally good results. Within a short time in this hospital the local use became a routine procedure in all kinds of infections or contaminated peritoneal conditions.

With the use of sulfanilamide locally, either in soft tissues or in body cavities, local concentrations from seventy-five to one hundred times higher than systemic concentrations may be obtained directly at the source of the infection. Furthermore, with proper amounts of the drug, absorption into the blood or tissue fluids does not exceed safe therapeutic levels, and no injurious action in tissues exposed to the concentrated drug is seen. Such high concentrations naturally have a higher bacteriostatic effect than the usual blood levels. We feel, from clinical observation, that even more organisms

Dr John A. Bralton helped with the statistics used in this paper.
Read before the Section on Surgery, General and Abdominal, at the Ninety Second Annual Session of the American Medical Association, Cleveland June 4, 1941.

¹ Domagk, Gerhard. Ein Beitrag zur Chemotherapie der bakteriellen Infektionen. *Deutsche med. Wochenschr.* 61: 250 (Feb 15) 1935.

² Sinclair, J. A., and Barker, O. C. Preliminary Report on Local Use of Sulfanilamide in the Treatment of Oral Lesions. *J. Canad. Dent. A.* 3: 571, 1937.

³ Jensen, N. K., Johnsrud, L. W., and Nelson, M. C. The Local Implantation of Sulfanilamide in Compound Fractures. *Surgery* 6: 12 (July) 1939.

⁴ Mueller, R. S. Use of Powdered Crystalline Sulfanilamide in Surgery. *J. A. M. A.* 116: 329 (Jan 25) 1941.

may be effected and that the action of the drug approaches that of a bactericidal agent. In many ways sulfanilamide compounds used locally are ideal tissue antiseptics in that they seem to have a low toxicity for tissue unlike other presulfanilamide compounds.



Fig. 1—Lower half, microscopic view of sulfanilamide crystals. Upper half, microscopic view of peritoneal exudate from patient, post mortem, in which the spaces occupied by the crystals may be seen.

We have continued to use the parent compound sulfanilamide rather than its derivatives sulfapyridine, sulfathiazole and sulfadiazine in all our peritoneal cases—first, because we began with that particular drug and have had no unpleasant experiences with it in the peritoneal cavity; second, because more is known about the fate of sulfanilamide in the human body in regard to its absorption, toxicity and excretion, and finally, because many patients must be treated with these compounds before the clinical observations and experimental investigations can be evaluated for that particular drug, in regard to its place as an adjunct to the surgical care of peritoneal infections. Sulfathiazole may be used instead with good results. In cases of abscess equal amounts of sulfanilamide and sulfathiazole may be used in the abdominal cavity and elsewhere. We are trying this combination at present.

STERILIZATION OF SULFANILAMIDE POWDER

The most suitable container for sulfanilamide powder is a sterile test tube in which the drug is placed in weighed amounts and sterilized. It is convenient to have amounts of 2, 4, 6 and 8 Gm. available in the operating room. The tubes are stoppered with a cork or cotton and then further sterilized by means of dry heat for two hours at 140 C. This causes no change in the crystalline powder. The other sulfanilamide compounds may be sterilized in the same way. The drug may also be autoclaved if moisture is not allowed to reach the powder, but if moisture does reach the

drug during sterilization the powder is converted into a solid mass which cannot be removed from the tube and is unfit for local surgical use. Sulfanilamide may also be obtained in sterilized form in ampules. However, it is not as easy to sprinkle the drug into the peritoneal cavity from the narrow necked ampules as from uniform width test tubes. It was difficult in the first few cases to determine the proper and safe amount of the drug which should be used. It so happened that we had been using 10 to 15 Gm. of sulfanilamide locally elsewhere in the body in compound fractures and in large dirty traumatic wounds. Therefore, in the first case about 12 Gm. was used. Since blood levels, taken postoperatively in this case, were within safe therapeutic limits, we felt that it was safe to continue to use about this amount. Infections of lesser degree require less of the drug. In peritoneal infections of very severe involvement, or when massive soiling of the peritoneal cavity has occurred, we have not hesitated to use even larger amounts. A total dose in the peritoneal cavity alone should never exceed 15 Gm. The cases in which drainage is established require more of the drug locally than those in which the cavity is closed without drainage, since a certain amount of the drug is lost through drainage.

Of the total amount of sulfanilamide used in any 1 case, two thirds is placed in the peritoneal cavity and the remaining third is sprinkled in the layers of the abdominal wall. Placing some of the drug in the



Fig. 2—Microscopic view of sulfanilamide crystals in peritoneal exudate of rabbit forty eight hours after operation.

abdominal wall has, without question, increased the rapidity of wound healing in cases of purulent infection. There is no doubt that involvement of the wound seems more limited and localized in the vicinity of the emerging drains. This has been such a consistent finding that in some of the cases of frankly purulent infection

we have closed the wound around the drains rather than suturing the peritoneum only and leaving the other layers unsutured. In many cases of peritonitis drainage of the peritoneal cavity could be eliminated with the use of sulfanilamide powder, but we believe that this is generally unwise. At least for the present the old rule "when in doubt, drain" should be followed

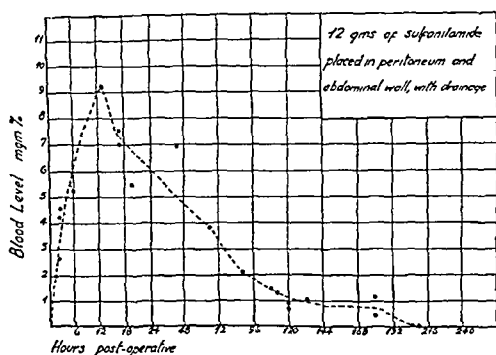


Fig. 3.—Computed average blood level curve.

as it was before the use of this drug. There are many cases of peritoneal infection not severe enough to justify the use of sulfanilamide in the peritoneal cavity but in which it is good practice to use 2 to 4 Gm. in the layers of the abdominal wall only. This will prevent or lower the incidence of infection in moderately contaminated wounds.

In very young children and infants the total dose of sulfanilamide used in the peritoneal cavity and abdominal wall should not exceed 3 to 4 Gm. Since age and weight modify the dose, it is safe to calculate the dose on a basis of 175 mg. per kilogram of body weight, after one has taken into consideration the degree of infection or contamination present.

TECHNIC OF LOCAL USE

The powdered drug is sprinkled into the peritoneal cavity as near the focus of infection as possible. This is considered a better method than that of depositing the drug in a mass in one place only, as we had formerly done. When no focus of infection has been found or when the patient is too ill to permit its removal, the powdered drug is deposited over the peritoneal surfaces beneath or adjacent to the incision. If the drug is deposited in one mass, where it remains in prolonged contact with a serosal surface, a local hemorrhagic area covered with fibrin may occur. There is no evidence in our series of cases that any harm has resulted because of it being used in this manner. It is usual for some hyperemia to occur in the immediate region where the sulfanilamide comes into contact with the peritoneum, but this lasts only for a short time. A moderate amount of serosanguineous discharge escapes from the drain during the first thirty-six hours after the operation. In cases in which a postmortem examination has been made three or more days after the operation, fluid is not found in the peritoneal cavity and no trace of hyperemia is seen. Before the drug is placed in the abdominal cavity clamps should be applied to the peritoneum preparatory to its being sutured, since the powder may obscure the field.

In the lower half of figure 1 a microscopic view of the sulfanilamide crystals is shown. In the upper half is a section of peritoneal exudate in which the spaces occupied by the crystals may be seen. This section was

taken from a patient operated on for peritonitis from diverticulitis of the colon and who died of lipid pneumonia. The small number of cells in the meshwork of fibrin around the crystals indicate the absence of irritative action of the sulfanilamide. Figure 2 is a similar section from the peritoneal cavity of a rabbit. The original photographs are the property of the department of pathology of Columbia University College of Physicians and Surgeons.

There is no clinical evidence that sulfanilamide used locally has any deleterious effect on catgut used in the abdominal wall or in the peritoneal cavity. We have not noticed any interference with wound healing; on the contrary, infected or contaminated wounds have healed with great rapidity, as compared with similar wounds not treated with the drug.

ABSORPTION OF SULFANILAMIDE

Postoperative blood levels have been taken in nearly all our cases and, in 20 cases, level determinations have been taken at frequent intervals. Sulfanilamide is rapidly absorbed from peritoneal surfaces. As soon as twenty minutes postoperatively blood levels of 2 to 3 mg. per hundred cubic centimeters have been observed. While the initial rise is rapid and fairly consistent, the fall in the blood level is much more gradual but shows the same consistency (fig. 3). The peak of the blood level is reached in from ten to eighteen hours and averages 7 mg. per hundred cubic centimeters. At the end of one hundred and seventy-five hours, in undrained wounds, levels from 0.5 to 1 mg. per hundred cubic centimeters are found. As a rule, after two hours no trace of sulfanilamide is found in the blood. In cases in which drainage is instituted the height of the initial rise is lower and the blood level falls more rapidly.

It must be remembered that absorption is occurring from two different places and two different kinds of tissue, i. e. the peritoneal cavity and the operative wound. The drug is absorbed less rapidly, and for a longer period, from the abdominal wall than from the

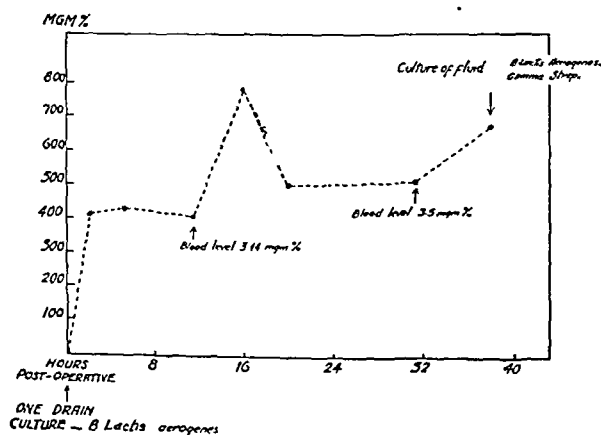


Fig. 4.—Sulfanilamide levels in drainage fluid of a patient with appendical abscess.

peritoneal cavity. When the sulfanilamide is used in the peritoneal cavity alone, and not in the abdominal wall, the fall of the blood level to zero takes place in from seventy-five to one hundred hours.

Draper and Kauer⁵ have shown that after the intra-peritoneal application of sulfanilamide in dogs the blood

5. Draper, J. W., and Kauer, J.: Personal communication to the authors.

level reached its peak in about six hours and rapidly approached zero in from sixty-five to seventy-five hours.

We mention these blood levels and absorption rates of sulfanilamide only as an indication that the drug is not absorbed into the system in toxic amounts. The greater the amount used, and the less it is allowed to

TABLE 1.—*Acute Appendicitis Series: 1935-1939*

Type	Cases	Deaths	Mortality, per Cent
Acute.....	566	3	0.53
Abscess.....	59	4	6.78
*Peritonitis..	117	14	11.96
Total.	742	21	2.83

* An additional death was discovered in this group after previous publication of this table.

be lost through drainage, the higher the possible blood level. Unless infection is present elsewhere outside the peritoneal cavity, the systemic concentration of the drug is of secondary importance only. The high levels, from 300 to 800 mg. per hundred cubic centimeters, that we have been able to obtain from samples of peritoneal fluid for more than forty hours postoperatively cannot be produced by the administration of any other form of the drug and are the active factors in controlling the peritoneal infection. We are unable to say at present whether the fall in peritoneal concentrations parallels the fall in systemic levels (fig. 4).

An analysis of acute appendicitis at Roosevelt Hospital during the five year period 1935-1939 is used as a background against which we hope to contrast our results since using sulfanilamide.

There was a total of 742 cases of acute appendicitis during the 1935-1939 period. In an analysis of such a series of cases certain criteria must arbitrarily be chosen to classify the various types of lesions so that they may be easily and clearly understood as well as easily and accurately compared with similar groups. It is for this reason that we eliminate the many confusing terms and classify acute appendicitis in the following manner.

Group 1.—Simple acute appendicitis. Here there is no gross perforation, and culture of fluid, if present, shows no growth. There were 566 cases of this variety with 3 deaths, a mortality of 0.53 per cent.

TABLE 2.—*Analysis of Deaths: 1935-1939*

	Deaths
Diffuse peritonitis ..	13
Postoperative pneumonia ..	7
Pylephlebitis and septicemia ..	2
Pulmonary embolism ..	1
Rheumatic heart and decompensation ..	1
Acute purulent cystitis ..	1
Total..	21

Group 2.—Acute appendicitis with localized abscess formation. There were 59 of this variety with 4 deaths, a mortality of 6.78 per cent.

Group 3.—Acute appendicitis with peritonitis. This final group includes both cases of spreading or diffuse peritonitis and those of the localized variety. It is believed that it is impossible to obtain a true knowledge of the extent of peritonitis through a McBurney incision, which was used in more than 95 per cent of our cases. The impression would vary with the individual surgeon and could be accurately determined only after an exploratory operation. There were 117 such cases with 14 deaths, a mortality of 11.96 per cent.

The total number of deaths was 21 in the three groups, giving a total mortality of 2.83 per cent. A fuller analysis of these deaths can be obtained from glancing at table 2, but needless to say the majority was directly attributable to peritonitis.

In January 1940 we began to use sulfanilamide in cases of severe appendicitis. The first few patients were desperately ill, the peritonitis in each instance seemed diffuse in character and the fluid was frankly purulent and had a fecal odor. The convalescence and cure of these patients was so dramatic that one could not help but be impressed with the value of the drug used in this manner.

A review of our past experience in the bacteriology of acute appendicitis with abscess formation and peritonitis showed that *Bacillus coli* was the predominant organism in 83 per cent of the cases. Other organisms encountered as etiologic factors in their order of frequency were gamma streptococcus and beta streptococcus. Sometimes associated with *B. coli* or with the streptococcus organisms were *Bacillus lactis aerogenes* and *Bacillus mucosus capsulatus*. No anaerobic cultures were taken.

TABLE 3.—*Sulfanilamide Used Locally in Cases of Acute Appendicitis (January 1940-May 1941)*

Type	Cases	Deaths
Acute	31	0
Abscess.	18	0
Peritonitis	41	0
Total	90	0

TABLE 4.—*Cases of Acute Appendicitis (January 1940-May 1941)*

Type	Cases	Deaths
Acute..	201	0
Abscess.	23	0
Peritonitis	44	0
Total	268	0

We have noticed no definite toxic effects except some cyanosis, which, though not a constant feature, is usually evident. The nausea and vomiting, if present, have not been sufficiently distinguishable from that to be expected in a patient convalescent from any operation.

There have been no cases of leukopenia or acute agranulocytosis, but there was 1 case of jaundice which was felt to be secondary to infection, as it disappeared under continued administration of sulfanilamide by mouth.

Persistent elevation of temperature did occur in a few instances, and in several of these cases it was felt to be directly attributable to the sulfanilamide.

In those patients in whom sulfanilamide was used, the ages ranged from 1 year to 75 years. The lesion in 45 per cent of the peritonitis group could definitely be considered diffuse. Many of these patients were critically ill; in a few instances the condition of the patient and the local conditions presented a hopeless picture.

From January 1940 to May 1, 1941 we operated on a total of 268 patients with appendicitis and its complications. There were no deaths in any one of the three varieties of the disease. Sulfanilamide was used in a total of 90, or 33.6 per cent, of the cases, representing the most severe varieties of the disease. In 16 of these 90 instances the administration of the drug was continued either by rectum or by mouth, because of the

extremely severe pathologic process encountered at operation or because of the continued critical condition of the patient. The added experience with dosage has led us to believe that a sufficiently large intraperitoneal application might eliminate the necessity for any continued postoperative administration.

TABLE 5—Comparison of Important Complications

Type of Complication	1935 1939 (741 Cases)		Jan 1, 1940 to April 1, 1941 (250 Cases)	
	Number	Percentage of Total Cases	Number	Percentage of Total Cases
Wound complication. . .	85	11.5	13	5.2
Secondary peritoneal abscess	21	2.8	2	0.9
Atelectasis	16	2.1	7	2.8
Pneumonitis	12	1.6	0	0
Wound separation . . .	8	1.1	0	0
Phlebitis	5	0.7	1	0.5
Pyelphlebitis	2	0.27	0	0
Jaundice	1	0.13	1	0.5

Complications were relatively few in the total series, and there was a noticeable reduction in wound infections and secondary peritoneal abscesses as compared to the previous years.

It has been used in other peritoneal infections as a therapeutic agent, but to evaluate its relative importance in lowering the mortality rates in these specific conditions will take time. A thorough comparative analysis of large numbers of cases within each group will be necessary before any conclusions can be reached (table 6).

We urge its use in cases in which there has been extensive soiling from perforated peptic ulcer, particularly in those instances in which the perforation has existed longer than twelve hours. It has seemed successful in diverticulitis, perforations of the intestine, gunshot wounds, acute biliary surgery, complete hysterectomy, certain cesarean sections and other similar conditions.

In cases of acute salpingitis in which operation was performed on the bases of a mistaken diagnosis, it caused an unusually smooth and rapid convalescence.

The dose employed in these cases has been on the same basis as that recommended in the treatment of appendicitis.

TABLE 6—Intra-Abdominal Application of Sulfanilamide (Exclusive of Acute Appendicitis)

	No of Cases	Deaths
As a prophylactic measure in abdominal surgery	90	8
As a therapeutic measure for peritonitis or abscess	21	6
Total	111	14

We are using it more and more frequently in elective surgery of the gastrointestinal tract, as a prophylactic agent, when actual or suspected soiling of the peritoneal cavity has occurred and when sulfaguanadine has not been used preoperatively. The dose under these circumstances has been considerably less, varying between 2 and 8 Gm.

SUMMARY AND CONCLUSIONS

Sulfanilamide is recommended for use intraperitoneally when any form of peritonitis is encountered at operation.

Its use in routine abdominal surgery when actual or suspected soiling has occurred will probably reduce the incidence of peritonitis and death.

It produces high local concentrations within the peritoneal cavity—from seventy-five to one hundred times the level reached in the circulating blood. This high local concentration seems to have a bacteriostatic or destructive effect on the bacteria.

There have been no serious local or general toxic effects of the drug when used in the recommended doses. The dose advised is 175 mg. of sulfanilamide per kilogram of body weight, two thirds to be applied intraperitoneally and one third in the wound layers. The total dose should never exceed 18 Gm., and this amount should be used only in cases of unusually severe involvement.

There have been no deaths among 268 patients with acute appendicitis since its use was commenced in January 1940. This experience encourages us to endorse whole heartedly the use of sulfanilamide intra-

TABLE 7.—Deaths in Which Sulfanilamide Was Used Intraperitoneally*

	No of Cases †
Chronic ulcerative colitis; subtotal colectomy	2 (P)
Traumatic rupture of urinary bladder, fractured pelvis.	1 (P)
Gangrenous ileum; peritonitis; resection; 9 day history	1 (T)
Gunshot wounds of abdomen, neck and back	1 (P)
Carcinoma of bladder; ureterosigmoid anastomosis.	1 (P)
Carcinoma of colon; Mikulicz's; 70 years old	1 (P)
Ulcerative ileitis with perforation, peritonitis	1 (T)
Empyema perforated through left diaphragm	1 (T)
Severe traumatic penetrating wounds of chest and abdomen, evisceration	1 (T)
Perforated carcinoma of rectum, peritonitis of 36 hours' duration	1 (T)
Adenocarcin	1 (P)
Actinomyco	1 (T)
Traumatic pelvis, fractured vertebrae	1 (P)
Total	14

* Many of these cases came to autopsy and in each case peritonitis was not found. A few patients died several hours postoperatively from shock due to the grave injuries. A few died two to three weeks postoperatively. The remainder died of pneumonia or of cardiorenal failure. Five patients with diverticulitis and peritonitis were operated on without a death.

† (P) prophylactic; (T) therapeutic.

peritoneally when indicated. We do not wish to give the impression that the mortality rate in cases of acute appendicitis will henceforth approximate zero, as we feel unusually fortunate that there were no deaths from embolism or other conditions entirely dissociated from peritonitis. We are firmly convinced that the application of this new weapon will lower mortality rates in all forms of peritoneal infection.

NOTE—Since this article was read in Cleveland the completed statistics on the intraperitoneal use of sulfanilamide as of Jan. 5, 1942 show that operations in 400 cases of acute appendicitis have been performed at the Roosevelt Hospital without mortality. About one third of these, 133 cases, were severe enough for the use of intraperitoneal sulfanilamide.

Instead of estimating the amount of sulfanilamide to be used by milligrams per kilogram of body weight, an easier guide for dosage is to take 8 per cent of the pounds of body weight in order to obtain the number of grams of sulfanilamide to be used in the average case in which drainage is employed. In the average case without drainage 6 per cent of the body weight in grams gives the proper amount, allowance always being made for the degree of infection present; i. e., more or less being used than the amount estimated according to the degree of infection present.

16 East Ninetieth Street.

THE USE OF SULFANILAMIDE IN
THE PERITONEUM

EXPERIMENTAL AND CLINICAL OBSERVATIONS

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Implantation of crystalline sulfanilamide in the peritoneal cavity has been practiced by many surgeons during the past year. Local application of sulfanilamide and its derivatives has been a valuable method of utilizing these drugs. In 1939 Jensen, Johnsrud and Nelson¹ reported the implantation of sulfanilamide in compound fractures with a considerable reduction in the usual incidence of infection. Burns, chronic ulcers, infected wounds, mastoid cavities, the lesions of acute and chronic osteomyelitis, meningeal abscesses and infected pleural cavities all have been treated with topical chemotherapy.

When sulfanilamide first came into use it was felt to be effective primarily against infections with hemolytic streptococci. With sulfanilamide treatment, a reduction in mortality due to primary streptococcal peritonitis was reported.² In peritonitis associated with appendicitis the infection is often a mixed one, with colon bacilli, Welch bacilli and various strains of streptococci commonly participating;³ yet Ravdin, Rhoads and Lockwood⁴ found such peritonitis favorably influenced by sulfanilamide therapy. At about the same time Garlock and Seley⁵ reported the successful use of sulfanilamide in preparation for operations on the colon.

It is not surprising, therefore, that the local use of sulfanilamide in the peritoneum was tried. Rippey⁶ has used sulfanilamide intraperitoneally in treating gunshot wounds of the abdomen. Within the past year Dees,⁷ Rosenberg and Wall⁸ and Thompson, Brabson and Walker⁹ have advocated the local application of sulfanilamide in the treatment of acute appendicitis. Wangenstein¹⁰ reported the intraperitoneal use of powdered sulfanilamide in resections of the colon.

There is a sound rationale for the local use of sulfanilamide for both the treatment and the prophylaxis

of peritoneal infection. Lockwood and Rhoads¹¹ have emphasized that an inflammation of a serous surface is the type of lesion which might be expected to respond favorably to chemotherapy. The organisms most commonly found in peritonitis are susceptible to the drug.¹² In the usual concentrations and in the tissues sulfanilamide and its derivatives are probably only bacteriostatic.¹³ If these drugs are accepted as bacteriostatic agents, infection or contamination of the peritoneum is a likely situation in which to employ them. By halting bacterial multiplication the drugs place the bacteria more completely at the mercy of the capable natural defenses of the peritoneum.

In general the effectiveness of sulfanilamide is proportional to its concentration. There are modifying factors, such as the nature of the lesion and the character of the exudate, for the wall of an abscess may form a barrier beyond which the blood-borne drug passes with difficulty, and an exudate rich in the products of tissue necrosis contains inhibiting substances.¹⁴ The local use of sulfanilamide is advantageous, because the drug can be placed in the center of a suppurating or contaminated area, where its local concentration becomes maximal. In the absence of suppuration even more favorable results can be expected, because no inhibiting substances are

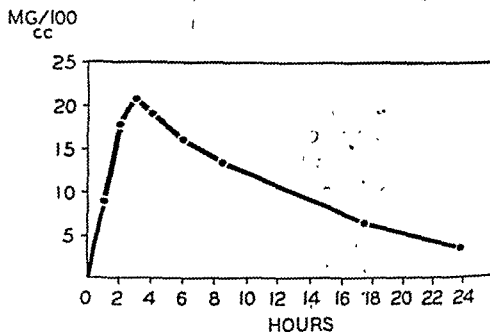


Chart 1.—Curve for absorption of sulfanilamide in dog 848 (weight 10 Kg.) following intraperitoneal implantation. Two Gm. of sulfanilamide, or 0.2 Gm. per kilogram, was given.

present. Under these circumstances the use of sulfanilamide in the peritoneum is similar to its local use in compound fractures, where contamination exists but frank suppuration is not established. Therefore, when open anastomoses have been made, when there has been accidental soiling of the peritoneum with the contents of the gastrointestinal tract, when walled-off abscesses have been broken into and the remainder of the abdomen exposed to contamination, then local chemotherapy should be of great value in aiding the natural peritoneal defenses.

During the past eighteen months we have used sulfanilamide intraperitoneally in suitable patients. We were uncertain what were safe doses and what harmful effects might result. Lockwood and his co-workers¹⁵

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have pointed out that there are hazards in using large amounts of sulfanilamide locally, for once the drug has been given its rate of absorption cannot be controlled and accidents may occur in sensitive patients.

Studies of the absorption of sulfanilamide by the peritoneum were carried out both on patients and on



Chart 2.—Curve for absorption of sulfanilamide in dog 846 (weight 10 Kg.) following intraperitoneal implantation. Four Gm. of the drug, or 0.4 Gm. per kilogram, was given.

dogs. These studies were done on relatively normal peritoneal surfaces, and our figures may differ from those of investigators who have worked in the presence of peritonitis. Known amounts of sulfanilamide were placed in the peritoneal cavity and determinations of the sulfanilamide in the blood made at given intervals. Curves were drawn plotting the blood concentration against time. Absorption of the drug by the peritoneum is rapid. The amounts in the blood rise to high levels during the first two or three hours and fall off gradually to low levels at the end of twenty-four hours.

In dogs large doses per kilogram of body weight were employed. It seems that there may be a limit to the rate at which the peritoneum can absorb the drug, since the larger the dose the longer the interval before the peak is reached. Yet repeated experiments with doses up to 0.5 Gm. per kilogram (the equivalent of nearly 35 Gm. for a 150 pound [68 Kg.] man) showed the peak to be reached before four hours. Very high levels were reached in the dogs, the values going as high as 40 mg. per hundred cubic centimeters of blood. When these high levels were attained there were still significant amounts in the blood at the end

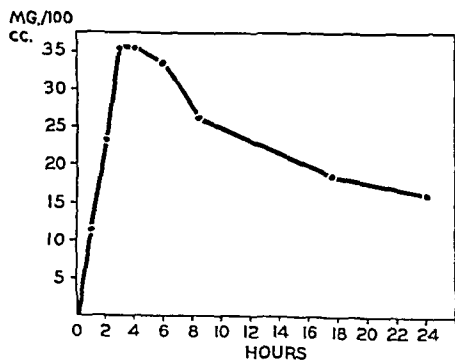


Chart 3.—Curve for absorption of sulfanilamide in dog 847 (weight 13 Kg.) following intraperitoneal implantation. Six Gm., or 0.46 Gm. per kilogram, was given.

of twenty-four hours, but at forty-eight hours the drug had nearly disappeared (charts 1, 2 and 3).

To compare absorption from the intestine with that from the peritoneum, fasting dogs were given the same amount of sulfanilamide by stomach tube as had been

given others of similar weight by peritoneum. When the drug was given into the peritoneum the peak was reached in three hours. When it was given into the stomach the level in the blood was still rising at twenty-four hours (chart 4).

In an attempt to slow the absorption of the drug and maintain a high local concentration for a longer time, sulfanilamide was suspended in a tragacanth-aleuronat mixture similar to that used in preparing Steinberg's coli-bactragen¹⁶ and injected into the dog's peritoneum. There was no appreciable slowing of the absorption (chart 5).

In human subjects doses greater than 5 Gm. of sulfanilamide were seldom used. Peak levels of nearly 10 mg. per hundred cubic centimeters were usually reached in about two hours, and at twenty-four hours levels below 2 mg. were found. There was considerable variation among individual subjects, for high levels of 16 to 18 mg. were observed in a few patients and relatively low ones in others (charts 6 and 7).

We have studied the records of 62 patients who have received sulfanilamide intraperitoneally during the past eighteen months at the University Hospital. There were three general indications for intraperitoneal admin-

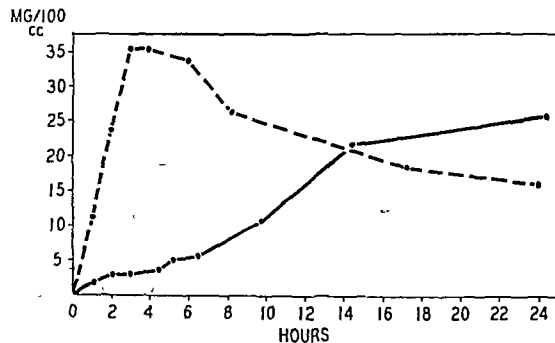


Chart 4.—Absorption of sulfanilamide in dog 847 (weight 13 Kg.; dose, 6 Gm. of powdered sulfanilamide given intraperitoneally) and in dog 937 (weight 12 Kg.; dose, 6 Gm. of the powdered drug given by stomach tube). The dotted line indicates the absorption of sulfanilamide from the peritoneum and the solid line the absorption from the intestine.

istration: operations in which spreading peritonitis was encountered or areas of intraperitoneal suppuration were entered; operations involving resection or anastomosis of the colon; operations on the upper portion of the gastrointestinal tract in which because of technical problems it was felt that the peritoneum had been soiled by intestinal contents. Several patients had stage operations, and the drug was used in them more than once, so that in the 62 patients sulfanilamide was implanted sixty-seven times (table 1).

The 62 patients can also be grouped on the basis of whether supplemental sulfanilamide medication was given. Thirty-three patients received no other chemotherapy, whereas 29 were given other sulfanilamide medication. All of the latter received sulfanilamide intravenously for at least one day postoperatively, and some received it orally later. Seven were prepared for operation by sulfanilamide medication (table 2).

In the 62 patients, whose chances of incurring peritonitis or of growing worse from established peritonitis were considered likely, only 5 had evidence of post-operative intraperitoneal suppuration. Two of the 5 were among the patients who received supplemental sulfanilamide. Of these 2, 1 with peritonitis compli-

16. Steinberg, Bernhard: Coli-Bactragen in Prevention of Peritonitis. Am. J. Clin. Path. 6: 253 (May) 1936.

done. The fact that a large number of experiments was not carried out probably detracts from the accuracy of our figures. These studies revealed that during the absorptive phase the concentration of sulfanilamide was considerably higher in blood from the portal vein than in the peripheral blood. Thirty minutes after the

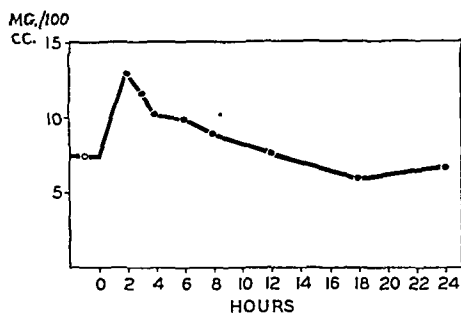


Chart 7.—Curve for absorption of sulfanilamide in H. P. (weight 142 pounds [64.4 Kg.]), who underwent ileotransverse colostomy for carcinoma of the cecum on April 22, 1940 and was prepared for operation by the oral administration of sulfanilamide for three days. At the time of intra peritoneal implantation (5 Gm. was given) there was a level of sulfanilamide in the blood of 7.3 mg. per hundred cubic centimeters.

administration of the drug the difference between the sulfanilamide content of the portal vein blood and that of the peripheral blood was approximately 40 per cent of the peripheral blood level (chart 9). At the end of four hours the concentrations were the same.

This initial high concentration of sulfanilamide in blood from the portal vein when the drug is absorbed by the peritoneum may cause more insult to the liver than is caused when the drug is absorbed more slowly. Greene and Hotz²⁰ reported on a patient with hepatitis following sulfanilamide medication who died and was autopsied. Tissue assays were made, and it was found that a concentration of 6 mg. per hundred grams was present in the liver, as compared with a concentration

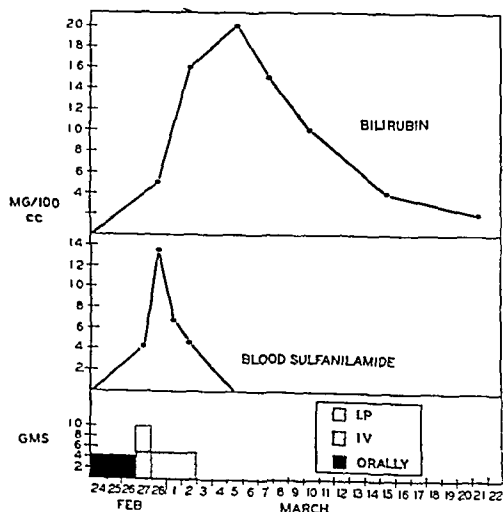


Chart 8.—Levels of bilirubin and of sulfanilamide in the blood in L. S. Deep jaundice developed in this patient twenty four hours after oral administration of sulfanilamide. She was prepared for operation, which is represented in the lower graph, on February 27. I. P., intraperitoneal medication.

of 1 mg. per hundred grams in the lungs. These authors suggested that there is perhaps a special affinity of the liver for the drug. If this is so, the passage of

high concentrations in the portal vein during the early stages of absorption may allow the liver to saturate itself with more sulfanilamide than it can safely handle in the face of subsequent medication. In our investigations no tissue assays were made. Sections of liver from dogs who received the drug intraperitoneally were examined microscopically and failed to show significant or specific changes which could be attributed to sulfanilamide.

Another interesting phase of the intraperitoneal implantation technic is the local mechanical effect of the sulfanilamide. During the period of absorption from the dog's peritoneum samples of peritoneal fluid were aspirated through capillary pipets and examined microscopically. There was no cellular response. Up to two hours later sulfanilamide crystals were found in the fluid, but none were found thereafter. Animals which had been given sulfanilamide intraperitoneally were killed from four hours to one month later and their abdominal cavities examined. In those killed after four hours small amounts of fluid were observed but there was no hyperemia and no exudate or crystals. In those killed later the peritoneal surfaces appeared entirely normal. No adhesions were formed. On microscopic examination of the serosal surfaces no variation from normal could be detected.

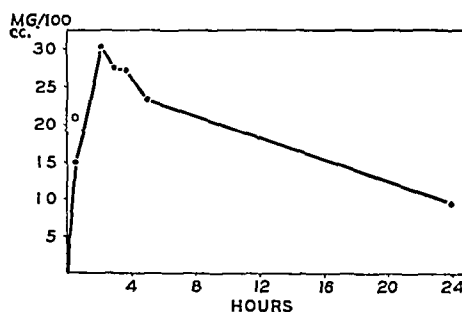


Chart 9.—Level of sulfanilamide in the blood of dog 942 (weight 12 Kg.). The small circle charted at one half hour represents the value for sulfanilamide in portal vein blood; the other points on the chart indicate values for jugular vein blood.

On the other hand, there is some reason to believe that sulfanilamide therapy may do much to prevent peritoneal scarring. Two patients treated intraperitoneally with sulfanilamide for diffuse purulent peritonitis died of other causes and have subsequently been seen at autopsy. In each instance it seemed remarkable that the angry process seen at operation had subsided without more adhesion formation. In each case the only gross evidence of the previous peritonitis was a single fine adhesive band. It is likely that chemotherapy alters the peritoneal reaction in infection. We have seen abscesses rendered sterile by sulfanilamide and its derivatives. Recently we treated a patient with staphylococcal septicemia and acute osteomyelitis, using sulfathiazole. The patient later had pericarditis with an effusion from which staphylococci were obtained by smear and culture. Yet typical purulent pericarditis never developed, for the effusion never contained more than 3,000 white blood cells per cubic millimeter. Eventually the effusion disappeared and the blood culture became sterile. It remains to be seen whether any permanent pericardial changes have occurred, but it is reasonable to suppose that there will be less scarring than there would be if the exudate had contained much fibrin and large numbers of pus cells. In the same way sulfanilamide may modify the process of inflam-

²⁰ Greene, C. H., and Hotz, R. Liver and Biliary Tract. Review for 1938, Arch. Int. Med. 63:779 (April) 1939.

mation in the peritoneum and, in addition to allowing recovery of the patients by controlling the infection, reduce the incidence of scarring with the formation of adhesions during the healing phase.

Another series of experiments was carried out in an attempt to evaluate sulfanilamide therapy in experimental peritonitis. Fecal peritonitis was induced in one group of 24 dogs. A fecal suspension was prepared by taking a weighed amount of fresh cage feces, suspending it in saline solution and filtering it through gauze. This was injected into the peritoneal cavity through a trocar. Experiments were all carried out on dogs in pairs, one dog being protected with sulfanilamide and the other being used as a control. The dogs were inoculated with equal doses varying from 1.5 to 5 Gm. of feces suspended in 50 cc. of saline solution. Four Gm. of sulfanilamide powder suspended in 100 cc. of saline solution was injected into the peritoneal cavities of the protected dogs and 100 cc. of plain saline solution into the cavities of the controls. It was not possible, in working in this fashion, to standardize the fecal inoculum, the dose being more virulent on some occasions than it was on others.

There were twelve paired experiments. In 4 the protected dog survived and the control died. In 1 both animals survived. In the 7 other experiments both

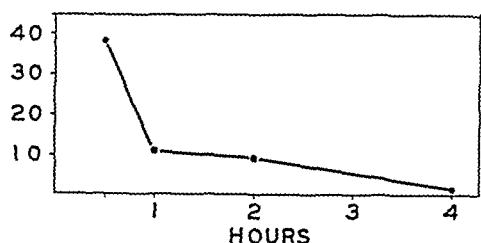


Chart 10.—Difference between the levels of sulfanilamide in portal vein blood and those in jugular vein blood, the sulfanilamide having been given intraperitoneally. The points on the chart were obtained by averaging the results of various experiments and represent the percentage of difference between the levels of the drug in specimens from the two sources withdrawn simultaneously at various intervals.

animals died, but the average survival time of the protected animals was twenty hours while that of the controls was twelve hours. This cannot be accepted as anything but suggestive evidence of the value of sulfanilamide treatment.

In an effort better to control the degree of infection, colon bacillus peritonitis was induced in another group of animals. The method of Steinberg and Goldblatt²¹ was used, various amounts of agar cultures of *Escherichia coli* (colon bacillus 300—Steinberg) being suspended in a tragacanth-aleuronat mixture. Thirty animals were employed in groups of 6, 3 in each group being protected with sulfanilamide, as in the group with fecal peritonitis, and the other 3 being used as controls. Doses of *Esch. coli* ranged from one half to one twenty-fifth of a twenty-four hour slant. Actually more control animals than treated animals survived. Possibly the use of the tragacanth-aleuronat mixture interfered with the usual action of sulfanilamide. Tragacanth is supposed to prevent by some mechanical action the rapid transport of the colon bacilli into the blood stream. This may interfere with the action of the drug either mechanically or because of some inhibitor substance.

Various conclusions may be drawn from these observations. In the first place, we feel that results were

gratifying in our group of patients who were treated intraperitoneally with sulfanilamide either to prevent or to overcome peritoneal infection.

Absorption of sulfanilamide from the peritoneum free of suppuration is rapid. It may be slower from the cavity of an appendical abscess, and there is every reason to suppose it would be. In the relatively normal

TABLE 2.—Incidence of Jaundice

Dedication	Number of Cases	Number of Cases of Jaundice	Incidence
Sulfanilamide given only intraperitoneally...	37	0	0
Sulfanilamide given orally and supplemented intraperitoneally	29	9	31%
Total	62	9	14.5%

abdomen the absorption is so rapid it is doubtful that the local use of sulfanilamide in the peritoneum is analogous to its local use in parts of the body where absorption is slower. It would be ideal if some method could be devised which would prevent the rapid absorption of the drug and allow it to remain in a higher local concentration. Perhaps more reasonable would be use of some allied compound with the same action which would be absorbed less readily and remain effective in the local sense longer.

Countering the rapidity of absorption from the peritoneal cavity is the fact that peritoneal administration offers the fastest method we know to raise the concentration in the blood to effective levels. If a spreading peritonitis is found at operation or if, because of technical difficulties, unforeseen contamination occurs, it is desirable to get effective chemotherapy started as soon as possible. If not overdone, intraperitoneal implantation is a fairly safe and extremely rapid method of administering sulfanilamide.

In the group of patients reported here there was a high incidence of hepatic damage. During the rapid absorption from the peritoneum the concentration of sulfanilamide in the portal vein blood reaches higher

TABLE 3.—Data on Chemotherapy and Jaundice

Patient	Clinical Jaundice	Blood Bilirubin, Mg. per 100 Cc.	Sulfanilamide in Blood, Highest Level, Mg. per 100 Cc.	Sulfanilamide* Given on Day of Operation, Gm.		Post operative Interval Before Jaundice, Days
				Intra-peritoneally	Intra-venously	
L. S.	4+	20.0	13.5	5	5	1
M. D.	2+	3.5	...	5	5	1
S. H.	3+	2.5	16.6	5	...	4
R. G.	3+	3.5	2.8	5	...	5
H. F.	2+	...	7.7	5	...	7
F. B.	3+	+	...	5	10	2
E. W.	3+	+	11.1	5	5	...
E. J.	3+	+	12.2	5	8	...
H. P.	3+	4.5	...	5	2 (orally)	...

* These 9 patients all received supplemental medication

levels than are reached when the drug is administered by other routes, and this may increase the danger of hepatitis. At least this incidence of jaundice emphasizes a hazard of intraperitoneal chemotherapy with too large amounts of the drug. In retrospect it seems that several of our patients in whom jaundice developed were given too much sulfanilamide on the day of operation. After an intraperitoneal dose of 5 Gm. of sulf-

21. Steinberg, B., and Goldblatt, H.: Studies on Peritonitis: Passage of Bacteria from the Peritoneal Cavity into the Lymph and Blood, *Arch. Int. Med.* 39:449 (March) 1927.

anilamide an interval of eighteen hours or more should elapse before further medication. In face of active infection it would seem wise to continue sulfanilamide treatment to obtain optimum results. When sulfanilamide is used prophylactically additional medication should depend on the clinical estimate of the degree of contamination and the power of the patient to resist it. Fortunately, no deaths due to hepatitis occurred in our series, and likely this is because larger doses were not used. From our experience we would be loath to use amounts of sulfanilamide much greater than 5 Gm. in the peritoneal cavity.

SUMMARY

1. The local implantation of sulfanilamide is of value in treating peritonitis and in aiding the peritoneum to overcome contamination occurring at operation.

2. Sulfanilamide is absorbed so rapidly from the peritoneal cavity that it is uncertain whether it is effective as a local medication in the same sense that it is in other parts of the body.

3. The peritoneal route offers the fastest method of administering the drug so that effective levels in the blood are reached.

4. There was a high incidence of hepatitis in the patients in this series, and the administration of doses larger than 5 Gm. is advised against.

5. There is no evidence that the local application of sulfanilamide injures the peritoneal surfaces, and it is suggested that chemotherapy offers promise of reducing scarring (adhesion formation) in the peritoneum secondary to pyogenic infection.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. MUELLER AND THOMPSON
AND DRs. JACKSON AND COLLER

DR. HENRY W. CAVE, New York: We have had at the Roosevelt Hospital a large experience with acute appendicitis. There were 742 patients suffering from this disease from 1935 to 1939, and in the past fifteen months there were 268 patients, 90 of whom were treated with sulfanilamide intraperitoneally without a single death. In only 1 instance in the entire series of 90 cases was there jaundice. The approximate dose was 12 Gm. per patient or 170 mg. per kilogram of body weight, and the sulfanilamide powder was placed in sterile test tubes, usually 2, 4, 6 and 8 gram doses, and sterilized by dry heat for two hours at 140 C. The peak of the blood level is reached in ten to eighteen hours. Generally, after two hundred hours no trace of sulfanilamide is found in the blood. There have been noted no toxic manifestations from intraperitoneal sulfanilamide in this series of over 200 patients. Also there has been no evidence of liver damage. The blood concentration is not important in peritoneal infections, but we are convinced that high local peritoneal concentration is important and is an active factor in controlling the disease. I am not convinced that peritoneal concentration is as of short duration as Drs. Jackson and Coller stated. We have demonstrated a peritoneal concentration as high as 600 mg. as long as thirty-six hours after operation. In other words, rapid fall in the blood level postoperatively is not paralleled by the fall in the peritoneal level. We have encountered, even three days postoperatively, sulfanilamide crystals in the peritoneal exudate. The 90 patients were all critically ill. All of these patients were immediately operated on. It is interesting that in Drs. Jackson and Coller's series the only patients acquiring jaundice were those who had daily received intravenously large doses of sulfanilamide in addition to the original peritoneal dose. I believe that if a sufficiently large intraperitoneal dose is used at operation it is not necessary

to give sulfanilamide compounds by rectum, by mouth or intravenously. Thus, toxic symptoms are unlikely to occur. It has been stated in both of these papers that sulfanilamide has been used in peritoneal infections other than acute suppurative appendicitis and as a preventive of infection within the peritoneum in all forms of resections of the intestine, end to end, side to side, end to side anastomoses, after hysterectomy and other abdominal operations. It has been my own practice to place around anastomoses inside the abdomen 4 to 6 Gm. of sulfanilamide crystals for their bacteriostatic effect. In some 5 cases of ulcerative colitis in which a subtotal colectomy was done we placed sulfanilamide in the peritoneal cavity; even in spite of this there were two deaths from peritonitis in this series of 5 in which we had used the drug.

DR. JAMES E. THOMPSON, New York: Dr. Mueller has shown a dramatic reduction in mortality from acute appendicitis following the introduction of sulfanilamide as an adjunct in the treatment of acute appendicitis with perforation. The effect of sulfanilamide is emphasized also by a reduction in such complications as secondary peritoneal abscesses; wound complications also were less, and we found that prolonged wound drainage was less. We have used sulfanilamide in a total of 90 cases as a prophylactic measure in surgery of the large intestine when there has been gross or suspected contamination, and in these we have had eight deaths. We have also used it as a therapeutic measure in 21 cases in which we have encountered peritonitis from causes other than acute appendicitis and have had six deaths, a rather staggering mortality rate; but these were unusually serious cases. The blood levels were taken in all our original cases, but only recently did we begin to get peritoneal levels in a few of our serious cases of appendicitis with peritonitis. A test tube is attached to one of the drains (if it was drained with two drains), a clamp put on the other one, and the collected fluid drained off from it. In 1 case at the end of seventeen hours the fluid was analyzed and found to contain 200 mg. of sulfanilamide per hundred cubic centimeters. In 1 case of perforated appendicitis with peritonitis, at the end of three hours we got a level as high as 880 mg. per hundred cubic centimeters, which dropped down at the end of five hours to around 200. In a case of acute appendicitis with abscess formation, in which we have placed 6 Gm. of sulfanilamide into an abscessed cavity around the cecum, 12 Gm. was placed in it. The abdominal wall was closed snugly about the drain. There was a prompt rise at the end of three hours to around 400 mg. per hundred cubic centimeters. It then reached the peak, which was around 780 mg. and dropped down again, going up at the end of thirty-six hours to 660 mg. Our culture at operation was a pure culture of *Bacillus lactis aerogenes*, while a culture at the end of thirty-six hours showed *B. lactis aerogenes* and the gamma streptococcus. The appearance of the streptococcus in a secondary culture has been rather frequent in our experience. Two features are evident: (1) that one can get a fairly well maintained local level of sulfanilamide for a period as long as thirty-six hours postoperatively and (2) that the sulfanilamide does not act as a true bactericidal agent but probably as a bacteriostatic one.

DR. ALTON OCHSNER, New Orleans: Our results have not been as dramatic as Drs. Mueller and Thompson's. We have observed some cases of jaundice and have seen some bad results from the implantation of sulfanilamide in the abdominal wall because of the exudation which is set up. Undoubtedly, many of these wounds can and will heal better with sulfanilamide than if allowed to become infected; still I think it should be emphasized that, unless there is gross contamination, sulfanilamide should not be used. Sulfanilamide produces an intense reaction of the wound, excessive exudation of serum and a prolonged healing. I should like to call attention to the advisability of not draining the peritoneal cavity in cases of generalized peritoneal infection or contamination. Dr. John Yates demonstrated experimentally almost forty years ago that it is impossible to drain the peritoneal cavity per se for longer than four to six hours, because after this time the drains become walled off and drainage is only along the course of the drain. A

number of years ago while serving as an exchange assistant in the Zurich Surgical Clinic I had an opportunity to compare the results obtained in cases in which the peritoneal cavity was drained with those obtained in cases of peritonitis in which no drainage was used. During the time Professor Sauerbruch was director of the clinic drainage was done in all cases, whereas during Professor Clairmont's tenure drainage was not done in the presence of generalized peritonitis. It is of significance that the incidence of residual abscess formation was considerably higher in the cases in which drainage was used prophylactically. This is undoubtedly due to the fact that the drain as a foreign body increases the peritoneal reaction and tends to produce pocketing. I think that, if one is to use sulfanilamide, drainage should not be used in the peritoneal cavity. I was interested in Dr. Mueller's statement that they were using sulfathiazole in conjunction with sulfanilamide. A word of warning about the use of sulfathiazole in serous cavities. I know of 2 cases with optic lesions, 1 a permanent optic atrophy, which resulted from sulfathiazole administration in sepsis and another a temporary optic lesion following sulfathiazole implantation in the pleural cavity. Whether this is a coincidental finding and what the connection is I don't know, but we have learned to fear sulfathiazole given intraserosally, probably because of the rapid absorption. Would it not be better to use possibly not as large a dose as Drs. Mueller and Thompson used, namely 12 Gm., but a smaller dose, as Drs. Jackson and Collier suggested, and repeat that in another four to five hours?

DR. FREDERICK A. COLLIER, Ann Arbor, Mich.: We have heard two presentations dealing with the curative aspects of sulfanilamide, the other, Dr. Jackson's, discussing largely the preventive aspects. We do know from past work that if there is an exudate in the peritoneum there will be a sharp limitation of absorption, and the facts presented by Drs. Mueller and Thompson bear that out very well. Those facts have been proved before. One cannot gainsay the evidence as presented by Dr. Jackson that in the normal peritoneum, whether in the experimental animal or whether one is using it in the comparatively normal peritoneum that has been contaminated, the absorption is more rapid and lasts for a very much shorter time. We have examined microscopically and grossly the peritoneum of many animals that have had enormous amounts of sulfanilamide placed there both in solution and as a powder, and we have yet to find any evidence of harm that has accrued to the peritoneum from the presence of even enormous amounts of the powder itself. The drug is not a panacea. I am sure, in operating on patients with peritonitis and acute appendicitis and with abscess that the proper time for operation was chosen, due thought was given to the type of anesthetic, and the chemical abnormalities of the patient were carefully corrected. We must emphasize the fact that chemotherapy is an adjunct to good surgery and will not replace it. I find that many physicians are now using these various drugs in all clean operations. Some one asked me the other day why it would not be a good idea to sprinkle it in the wound after a radical mastectomy. Those wounds do well if they are done with the good surgery that we already know about. I think it unwise to use these chemicals in the hope that they will improve what otherwise might be called inadequate surgery. There is one point that I should like to mention in closing (Dr. Ochsner has already mentioned it), and that is our use of these chemicals in the contaminated abdominal wall. Many times, let us say, we operate on a colon, the clamp slips, and we deal with a contaminated peritoneum. Certainly we shall use sulfanilamide there and shall expect some help from it. On the other hand, if the virgin abdominal wall that has never been in contact with infection of any kind until the incision is made is contaminated with the contents of the colon, it has been suggested that these chemicals be used in the wall. My experience is just exactly that mentioned by Dr. Ochsner, that it makes a messy wound, no matter how one uses it. These salts are hygroscopic, and they have a peculiar glazing or coagulating action on the fat of the subcutaneous tissue which I do not like.

DR. F. L. REICHERT, San Francisco: The use of chemotherapy in the peritoneal cavity brings up the question as to what happens when a powder is placed in it. The interesting fact that was brought out in the discussion as well as in Drs. Jackson and Collier's paper was that they experimentally, in normal animals, found that there was no reaction whatever to the use of sulfanilamide. Dr. Laird and Dr. Stavern, in the surgical research laboratory at Stanford, have placed the powder of sulfanilamide and of sulfathiazole intraperitoneally into normal dogs and have found in general that there has been no reaction in the peritoneum or in the omentum but that there has been some reaction in the wound of the abdominal wall. When sulfathiazole was used, about 0.5 mg. per kilogram, there was some induration of the root of the mesentery. There were no adhesions, but in the abdominal wound there was considerable secretion. They also used sodium sulfathiazole and found severe reaction, with adhesions and matting together of the loops of bowel and mesentery. Sodium sulfathiazole has a pH of about 11, whereas sulfanilamide and sulfathiazole have a neutral pH of about 6.3 or 6.5. From their experimental work I think one is justified in using sulfanilamide and sulfathiazole powder intraperitoneally; certainly not sodium sulfathiazole.

DR. MISCH CASPER, Louisville, Ky.: I have used sulfonamide agents in many cases of ruptured appendix and acute peritonitis. I used it once in a perforated stomach that was seen after twenty-four hours' delay, the perforation being due to a stab wound, one perforation on the anterior wall of the stomach and two in the lesser sac. The peritonitis was limited to an area about 8 or 10 inches in diameter, and sulfathiazole was used in this case without any bad results. It looked like a good case in which to try it, because there was developing already a definite area of peritonitis, which may have been a chemical form of peritonitis. Also sulfathiazole was used in 1 case of cesarean section. It had been a badly handled case before it came to the hospital. It had been examined and reexamined by no fewer than five doctors. We contented ourselves with placing sulfathiazole into the emptied uterus, also on the peritoneal line of stitches on the uterus and in the wall. I do not remember any similar case reported before. The patient came through without any elevation of temperature and with a normal recovery. We have lately been using sulfathiazole instead of sulfanilamide. We used only 7 Gm.; that is the highest amount we have used in the abdomen, and 2 in the wall. I feel sure that in these sulfonamide drugs we have one of the greatest agents for cure in all time, ranking certainly with the ten most useful drugs. We have had no cases of jaundice following this procedure. That may be because we use a smaller dose than some of the others. I should like to call attention to an old professor's saying that anything that is potent for good is also potent for evil; hence, no doubt cases in which the sulfonamides are used rather indiscriminately will show up some evils in the future, and we must watch out for those.

DR. R. STERLING MUELLER, New York: In our series of cases from Roosevelt Hospital we have used it in only the severe cases. We would not use it in a clean or only slightly contaminated case. But if one is going to use it in the abdominal wall in an undrained case in which there is slight contamination, one must be sure to spread the drug around, to deposit it around the wound so that it does not form a mass in one spot, because those cases especially will show a reaction. I also want to warn against using sulfanilamide intraperitoneally in those cases in which sulfanilamide compounds have been used preoperatively. We feel that the advantage of the larger dose makes it unnecessary to give it postoperatively. In the last few months there have been but few cases in which we have given it after operation. I think that if one does give it in cases in which it was used preoperatively, and especially in those cases in which it is used postoperatively by the intravenous route, one might see jaundice. In reply to Dr. Ochsner's suggestion about giving it at two different times four or five hours apart, I do not believe that would help any. We prefer giving the larger dose. We believe that the fibrin which masses around the crystals prolongs its absorption.

CESAREAN SECTION

INDICATIONS FOR AND RELATIVE MERITS
OF THE CLASSIC, LOW AND EXTRA-
PERITONEAL OPERATIONS

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The indications recognized as valid in modern practice for the exhibition of cesarean section are numerous. Historically, this operation has been employed only for high degrees of fetopelvic disproportion. Indeed, until about fifty years ago its validity on any other grounds was not recognized. Up to that time it was so dangerous as to be applicable only to what was known as the absolute degree of pelvic contracture, because of which not even a mutilated dead baby could be otherwise removed from its mother's body, and the relative degree of contracture, which meant that a living baby could scarcely be otherwise delivered.

In the last forty to fifty years, however, the term relative disproportion has become so liberalized as to connote any degree of fetopelvic disproportion which makes vaginal delivery unusually difficult or carries more than a minimum hazard for the baby's survival in vaginal delivery. This trend, while undoubtedly conservative in expert hands, has been pernicious in the hands of the occasional operator lacking the obstetric capacity adequately to judge corollary conditions affecting individual situations.

Paralleling the more liberal attitude involving the fetopelvic relation of size is the use of cesarean section for other mechanical interferences with labor, such as malpresentation, occasional factors of dystocia of the soft parts of the birth tract and tumors extrinsic to the uterus.

Another group of indications comprises nonmechanical abnormalities peculiar to the pregnant state, such as certain types of placenta previa, abruptio placentae and severe, rapidly progressive toxemia.

Still another group involves disease conditions in the mother not primarily dependent on the pregnancy, such as tumor of the uterus or other organs not necessarily mechanically obstructing labor but indicating from its nature operative ablation, rare cases of heart disease, diseases of the central nervous system and acute infectious diseases.

All the foregoing groups of indications are today generally accepted as valid provided that treatment in individual cases is determined with average good obstetric judgment. There are many other indications, however, for which cesarean section has been not infrequently used, such as primigravidity in the elderly, election by neurotic patients and high social value of the offspring, which can hardly be considered legitimate unless assessed with an extraordinary degree of conscientious thought and obstetric competence in individual cases.

With reference to what has so far been said, therefore, cesarean section should ordinarily not be undertaken at all except with the concurrence of at least two physicians, one of whom should be, if possible, an

obstetrician of acknowledged competence and experience. This rule should govern its employment according to definite regulations in all properly organized hospitals.

A brief tracing of the history of the operation indicates that up to the period of anesthesia and antisepsis the technic was exceedingly crude and not designed to cope successfully with the hazards of hemorrhage and infection. It was only when antisepsis and asepsis were applied to surgery and Sanger pointed the way toward adequate control of hemorrhage by careful suture of the uterine incision that the expansion of the availability of the operation as already sketched was possible. Sanger's operation, which involved a high paraumbilical incision of the parietes and a uterine incision placed longitudinally about in the midline of the corporeal segment of the uterus, well up toward the fundus, has become known as the classic type of cesarean section. Great as was the improvement of this technic on the older ones, however, it has several serious inadequacies. Spill of uterine contents and blood into the peritoneal cavity cannot be avoided, even by the most careful packing about the uterine incision; moreover, this spill involves the upper, less resistant portion of the peritoneum. The incision in the uterus involves the thickest and generally most vascular portion thereof. Hemorrhage is apt to be relatively profuse and accurate coaptation by sutures difficult. As a result, healing by

TABLE 1.—Classic Section, Sixty-Eight Cases

61 cases of operation, with intact membranes and no labor.....	Days of Morbidity										Over 10	Total	Percentage of Morbidity
	2	3	4	5	6	7	8	9	10				
	8	6	4	2	0	1	0	0	7	2		30	44.1

first intention is frequently imperfect and a weak scar remains in the portion of the uterus which is called on to do the most work in a subsequent delivery. Hence the incidence of rupture of the scar, both in our own experience and in experience reflected in many published series, has been high. The dangers inherent in rupture have therefore to be assessed against the indications for the original operation in cases in which it occurs.

In earlier experience of cesarean section, the tendency to employ it as a late necessitous procedure on patients already infected by prolonged labor and mishandling led to a high death rate from peritonitis. Numerous attempts were therefore made to devise technics that would lessen the risk. The first important contribution to the evolution of operative technic was the operation of Porro. This operator everted the whole organ, emptying the uterus and then amputating it at the level of the junction between the body and the neck. The peritoneum was secured about the cervix, and the stump of the cervix was exposed in the parietal incision. This operation definitely diminished the risk of peritonitis but involved the loss of the uterus and the shock attending so formidable a procedure. It is still occasionally used for its original purpose of avoiding peritoneal infection in cases in which the removal of the uterus is necessitated by a concurrent pathologic condition. In more recent practice it has been modified by peritonealizing the cervical stump and dropping it back into the pelvis.

About thirty years ago numerous technics were proposed for approaching the uterus beneath the perito-

From the Margaret Hague Maternity Hospital.
Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

neum, with the thought of lessening the risk of peritoneal infection and at the same time conserving the uterus. Out of those attempts there have evolved a number of operations, which fall into two types. The first type, true extraperitoneal operations, includes the Latzko operation, in which a paramedial incision is

have been proposed from several clinics. Thus Irving reported the use of the Hirst operation, in which after vertical incision of the parietes the uterine and parietal layers are sutured to each other about a proposed vertical line of incision in the uterus, the peritoneal suture line being reinforced by a tier of fascial sutures. Cook approximated the round ligaments to the parietal peritoneum, thereby walling off a roughly quadrangular space low down on the uterus. Smith made his approach through a Pfannenstiel incision, incising the parietovesical and vesicouterine layers of peritoneum close to the bladder and completely amputating a small cap of peritoneum over the fundus of the bladder. These layers are then carefully sutured. The bladder is mobilized, and the uterus is approached by transverse incision through the lower uterine segment.

All the operations mentioned have the initial objection of opening the general peritoneal cavity widely, of being somewhat time consuming because of the extra amount of suturing used preliminary to opening the uterus and inviting in the case of Cook's operation a localized peritonitis which prolongs the hospital stay of the patient, and in operations of the first type of placing dependence on a suture line which readily tears with the extraction of the baby and the retraction of the

TABLE 2.—Low Cervical Sections Total Analyzed 637, Vertical 127 and Transverse 510

Hours in Labor with Membranes Ruptured	Days of Morbidity											Over 10	Percentage of Morbidity
	0	2	3	4	5	6	7	8	9	10	11		
0 1	225	76	57	31	17	8	9	10	3	1	11	223 of 448	49.8
2	3	1	1	0	1	0	0	0	0	0	0	3 of 6	50
3	5	4	0	1	0	1	0	1	0	0	0	7 of 12	58.3
4	6	3	0	0	1	0	0	0	1	1	0	6 of 12	50
5	5	2	2	0	0	0	0	0	0	0	0	4 of 9	44.5
6	11	2	2	2	0	1	0	0	0	0	0	7 of 18	58.9
7	3	1	0	0	0	1	0	1	0	0	0	3 of 6	50
8.	6	2	1	0	0	1	0	0	0	0	0	4 of 10	40
Total	264	91	63	34	19	12	9	11	4	2	11	257 of 521	49.3

made just above the symphysis, the bladder mobilized to the right (mainly by blunt dissection), the peritoneum displaced upward and the uterus entered by a vertical or a diagonal incision in the lower segment well down to the vaginal reflection from the cervix. The technic is not too difficult for any competent and experienced obstetric surgeon. It does, however, involve some danger of injuring the bladder near the base and some possibility of injuring the ureter. It is somewhat restricted in the space available for removal of the baby. In spite of these potential drawbacks, however, large babies have been successfully extracted by it, and our results with the operation have been exceedingly good in spite of a few technical accidents.

The only other type of true extraperitoneal section with which we have had experience is that developed by Waters in our clinic. In it the lower uterine segment is approached to the left of and above the bladder, a wide exposure of it being made through which a generous transverse semilunar incision can be made which permits easy extraction of even a large baby. The dissection in this operation is entirely away from the base of the bladder, the ureter and the large vessels of the parametrium. We have been highly successful

TABLE 3.—Extraperitoneal Cesarean Section (Total Cases Analyzed, Two Hundred and One)

Hours in Labor with Membranes Ruptured	Days of Morbidity											Over 10	Percentage of Morbidity
	0	2	3	4	5	6	7	8	9	10	11		
25 - 30	12	3	2	1	2	1	2	1	2	4		18 of 30	60
31 - 35	3	1	3	2	0	1	0	1	0	0		8 of 11	72.7
36 - 40	2	3	3	0	1	2	0	0	0	0		9 of 11	81.8
40 -120	11	4	4	3	1	5	2	4	2	7		32 of 43	74.4
Total	28	11	12	6	4	9	4	6	4	11		67 of 95	70.5

with it. Some of our staff prefer it to the Latzko operation, whereas others continue to use the Latzko.

A kind of compromise type of operations is represented by several technics of so-called peritoneal exclusion. In such operations the approach is by the peritoneal cavity, restricted areas of which are closed off by artificial approximation of parietal and visceral layers from the general cavity before the incision is made in the uterus. While the principles of these operations appeared relatively early, recent modifications of them

TABLE 4.—Maternal Mortality from Classic Section in Sixty-Eight Cases

Condition of Patient	Deaths
Admitted moribund with lobar pneumonia. . . .	1
Had carcinoma of breast; admitted with advanced carcinomatosis	1
Died on operating table from cardiac collapse	1
Had pulmonary tuberculosis	1
Had puerperal sepsis, abruptio placentae, hypertension and cardiovascular renal disease	1
Had peritonitis	1
Had an antero and cardiovasc	1
Total	7 (10.5%)

uterus. The introduction of the fascial tier of sutures in Irving's modification is directly necessitated by this risk.

Shortly after the attempts to develop true extraperitoneal operations, a number of surgeons attempted to refine the Sanger operation by approaching the uterus through the lower segment, where bleeding is less, where it is feasible to cover the incision by two layers of peritoneum and where the scar of the incision will not be so disturbed in future labors. Of all technics developed on this basis the best known are those of De Lee, Beck, Munro-Kerr and Phaneuf. The bladder is mobilized from the lower uterine segment by incision through the vesicouterine peritoneum, and the lower uterine segment is incised vertically or transversely. We believe, in spite of the adherence of many capable operators to the Sanger operation, somewhat modified in most cases by a subumbilical incision of the parietes and by placing the uterine incision as low as possible without disturbing the relation of the bladder to the uterus, that the operations which most truly confine the incision in the uterus to the lower segment are preferable to those which involve mainly the corporeal segment. For this reason, in recent years we have preferred in most cases the transverse lower segment operation.

From what has been said in the foregoing brief sketch of the various operations concurrently in use in this

country, it is obvious that in general the transperitoneal operations are technically the simplest and therefore are to be chosen in preference to the slightly more difficult extraperitoneal types. Especially is this true when the time element is important with regard to the mother, as when she has severe hemorrhage, or to the baby, as

TABLE 5—*Maternal Mortality from Low Cervical and Extraperitoneal Section*

Low Cervical Section Deaths		Extraperitoneal Section Deaths	
Cause	No.	Cause	No.
Peritonitis	2	Peritonitis (severance of ureter)	1
Pulmonary tuberculosis . . .	1	Peritonitis, 53 H L with M R	1
		Hemorrhage	1
Total	3	Acute heart failure	1
Percentage in 637 cases, 0.471		Total	4
		Percentage in 209 cases, 1.913	

when prolapse of the cord occurs when rapid vaginal delivery is impossible and cesarean section is resorted to in effort to save the baby. Generally speaking, therefore, transperitoneal operations are to be chosen when the time of operation is elective as far as the duration of labor is concerned. This principle will generally apply in cases of disproportion sufficient to make the employment of cesarean section a predetermined matter; in cases of the hemorrhagic complications of labor, such as placenta previa and premature separation of the placenta; in cases of severe toxemia in which there has been no labor at all, and in similar situations.

Cesarean section has to be done, however, in many cases in which previous hope of successful vaginal delivery is disappointed in actual labor. In all such cases there is a greatly heightened risk of infection, on the basis of either neglect and injudicious handling or the mere duration of labor and the interval between the rupture of the membranes and the time of operation. The employment of any transperitoneal type of operation in these cases is inadmissibly dangerous, and the only safe recourse is to mutilating operations, such as the Porro operation, or to extraperitoneal section.

One may perhaps ask why in a well organized clinic there should ever be disappointment of the prognosis made prior to labor provided that prognosis was based on such care in prior examination as many physicians

TABLE 6—*Fetal Mortality After Classic Section in Sixty-Eight Cases*

Condition of Mother	Number of Stillbirths
Abruptio placentae	10
Toxemia, unclassified	1
Hypertension and cardiovascular renal disease	1
Mother moribund with lobar pneumonia	1
Total	13 (19.12%)

believe to be within the competence of qualified obstetricians. We do not believe that absolute accuracy of prognosis is within the competence of any man. We believe this because in our own clinic a large number of patients are conscientiously and carefully subjected to all due scrutiny by a staff of alert, well trained, experienced obstetricians. Any one of us would readily concede that any number of obstetricians might possess higher competence than his own. We are not ready, however, to concede that many obstetricians possess

higher practical competence than is represented by our combined resources. Our error approximates 20 per cent. In the 20 per cent of patients for whom our prognosis has been erroneous there are two groups. In the one to whom we have given a good prognosis not all are successfully delivered by the vagina. If we persisted in delivering all this group from below we would certainly lose babies which should survive. But it is not certain that some of them are undeliverable by the vagina until many hours of labor have passed. We cannot safely apply transperitoneal technics of cesarean section to them. Hence of necessity we have to resort to extraperitoneal section. The other group, for whom we may fear that vaginal delivery will not be reasonably possible, sometimes are delivered by the vagina. To subject all this group to elective section without some test of labor would certainly result in a large number of unnecessary operations. Therefore, in respect to fetopelvic disproportion, we seldom employ cesarean section without some trial of labor. In making this confession we have no apologies to offer but feel

TABLE 7.—*Fetal Mortality After Low Cervical and Extraperitoneal Section*

Low Cervical Section (637 Cases)			
Stillbirths (28)		Neonatal Deaths (25)	
Cause	No.	Cause	No.
Abruptio placentae	19	Erythroblastosis	3
Preeclampsia	2	Icterus gravis	1
Placenta previa	1	Hydrocephalus	1
Eclampsia	1		5
Unexplained	23	All other causes	20
	5	(Included are all babies of 1,500 Gm. or over)	25
	28		
Mortality of whole group, 53 of 637, 8.32%			
Extraperitoneal Section (209 Cases)			
Stillbirths (8)		Neonatal Deaths (3)	
Cause	No.	Cause	No.
Unexplained	8	Intracranial hemorrhage	1
		Others	2
			3
Mortality of whole group, 11 of 209, 5.26%			

that such a policy contributes definitely to the best interest of our patients.

We will briefly exhibit the results of the employment of the three types of section by us during the last eight years, an approximate incidence of 2.5 per cent. In connection with these brief statistics two considerations must be accepted:

1. They are presented on only a few bases, and no attempt is here made to adjust responsibility for deaths or to delete deaths from any cause whatever; moreover, gross statistics of morbidity do not exhibit relative desirability in relation to severity of morbidity.

2. There is no significant technical difference between the classic type of section, as defined in this paper and practiced by us, and the lower segment type, especially when a vertical incision is employed. (This is extremely important.)

In table 1 is exhibited a maternal morbidity of 44.1 per cent in 68 cases of classic section, in about nine tenths of which the operation was performed under absolutely elective conditions.

In table 2 is a more detailed exhibition of the morbidity from 637 low transverse sections, 510 of which included transverse incision of the uterus, 521 of which

were done under virtually elective conditions, i. e., without more than nine hours of labor with ruptured membranes. The average morbidity is slightly higher than that for classic section, but our distinct impression is that the severity of the morbidity is less.

In table 3 are shown similar morbidity statistics for extraperitoneal operations, about half of which were by the Latzko technic and the rest by the Waters technic. All the patients had been in labor with membranes ruptured for more than twenty-five hours, thus presenting a distinct difference as compared with the other patients, on whom operation was done early in labor. As is to be expected, the morbidity is definitely higher. It is significant, however, that in no case did the morbidity exceed ten days.

Table 4 shows the maternal mortality from classic section in 68 cases, amounting to 10.3 per cent. It is evident from this table that in all the fatal cases this type of operation was selected with reference to the condition of the mother, to shorten the time of operation, without reference to other considerations. Therefore the inordinately high mortality is not a valid index of the possibilities of classic section and will be excluded from further discussion.

Table 5 exhibits the maternal mortality from low cervical and extraperitoneal section. We believe that this table most significantly indicates the necessity for reserving all types of transperitoneal section for patients whose condition gives relatively favorable indications.

Table 6 shows the incidence of stillbirths after classic cesarean section: 19.12 per cent. The same observation applies to this incidence as was made with reference to maternal mortality from classic section, and no significance will be attached to it in our discussion or conclusions.

Table 7 gives the fetal mortality after low cervical and extraperitoneal cesarean section.

CONCLUSIONS

1. Modern indications for cesarean section are relatively broad but must be assessed by careful individualization of cases on the basis of sound obstetric judgment and careful consideration of conditions.

2. When conditions are relatively elective the transperitoneal approach is best, on the basis of greater rapidity and facility of technic.

3. Favorable elective conditions include complete lack of contamination, freedom from clinical evidence of infection, duration of total labor not in excess of twenty-four hours and duration of labor with ruptured membranes not in excess of eight to twelve hours.

4. When the transperitoneal approach is made under the foregoing conditions it is relatively immaterial whether the modern classic technic or a lower segment technic is employed. We believe, however, as a matter of mature observation, that the lower cervical technics result in smoother convalescence and in decidedly less danger of future rupture of the scar.

5. In cases in which the previously indicated conditions do not obtain, operation should be confined to the technics embracing extraperitoneal approach. The results of such technics, even in much-neglected patients, have been in our experience extremely good in relation to maternal mortality and morbidity and to fetal survival.

254 Union Street.

MORTALITY, EARLY AND LATE, FOLLOWING CESAREAN SECTION

FREDERICK H. FALLS, M.D.

CHICAGO

When in the course of pregnancy or labor it becomes necessary to consider delivery by cesarean section as the best way to minimize the danger which is present in an individual case, the various methods of delivery from below must be carefully compared in order to evaluate their dangers to mother and baby under the peculiar exigencies of the situation. A careful weighing of the possibilities for each method of delivery is mandatory in order to avoid unnecessary risk. This can be done effectively only by a physician thoroughly trained in obstetrics. It is possible for one with sufficient general surgical skill to operate on the mother, to obtain a live baby and to have the mother also survive. Practically, however, it is found that in many instances the operation might have been avoided if the strictest indications had been observed and operative intervention delayed until absolute necessity dictated it. Failure to observe these principles is reflected in increased maternal and fetal mortality.

A second important factor contributing to mortality among women who eventually are delivered by cesarean section is the pernicious, wishful thinking of obstetricians of the Micawber type, who are always waiting for something good to turn up in an obstetric case instead of making careful estimates of what the forces of nature have done and may do to bring about spontaneous delivery. Too often the medical attendant suffers from an acute subluxation of the wishbone until it displaces his backbone. Patients are often allowed to progress until they get into serious difficulty, and the dangers of cesarean section are enormously increased by failure to seize the golden opportunity to do the operation early under favorable circumstances in place of procrastinating until conditions for surgical success are at the vanishing point. It is especially irritating when timidity is permitted to masquerade as conservatism. The policy, then, should be to be wisely conservative until circumstances indicate that one's attitude is creating a more dangerous set of circumstances than existed before, at which time more radical treatment must be undertaken.

The mortality from cesarean section depends on a number of factors, which may operate singly or in combination to bring about the fatal result. The dangers which threaten the lives of the mother and the baby may be inherent in the operative procedure itself or depend on the conditions necessitating the operation or on certain complications arising during convalescence or later. In this discussion I shall quote few statistics, for although statistics are valuable from a historical standpoint they are usually dependent on a variation in material and technic so wide as to be of little practical value for comparison with results obtained in one's practice. On the other hand, the dangerous complications which result in mortality are the same universally, and their nature and avoidance will be the theme of this discussion, in which I shall consider both maternal and fetal mortality.

From the Department of Obstetrics and Gynecology, University of Illinois College of Medicine.
Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

Inherent in every cesarean section is the danger of hemorrhage not only at the time of incision into the uterus but immediately before and after operation. The severity of preoperative hemorrhage frequently may be gaged from the history of the patient or from the evidence presented by the visible loss of blood and from careful and repeated blood counts. In many cases the operation can with advantage be temporarily delayed until the acute anemia has been overcome in whole or in part by blood transfusion. If a continued hemorrhage indicates an immediate operation, concomitant blood transfusions can be given. All too often the preparations for transfusion are postponed until the serious condition of the patient forces the physician to recognize the necessity for transfusion. When this occurs panic and haste interfere greatly with speedy, efficient service and technic. Hence all pregnant women who bleed vaginally should have a complete blood examination, including erythrocyte, leukocyte and differential counts, together with estimation of the hemoglobin content, blood typing and cross matching with the blood of suitable donors as soon as possible after the appearance of the hemorrhage. Under circumstances in which blood transfusion cannot be arranged the intravenous use of pooled serum or acacia solutions is indicated; failing these, the injection of dextrose in 10 per cent solution in physiologic solution of sodium chloride is useful.

During operation a severe hemorrhage may unexpectedly occur immediately after delivery. This complication is especially to be feared if the placenta occupies a position in the anterior wall just under the uterine incision. This tendency is greatly reduced, in my experience, if as a prophylactic routine 1 cc. of solution of posterior pituitary is injected directly into the uterine muscle a few moments before it is incised. I have never seen serious shock follow such an injection, although the possibility has been pointed out by other investigators. After the birth of the baby the uterus should be stimulated by vigorous massage if it tends to relax, and it may be brought out onto the surface of the abdomen for this purpose if necessary. It is my custom to compress by Allis forceps the larger uterine sinuses found bleeding on the cut surface of the uterine incision, until sutures can be placed.

After the birth of the baby it is my custom to inject a dose of an active ergot preparation into a deltoid muscle to increase the uterine muscle tone. If slight bleeding persists the uterine cavity may be packed with gauze soaked in weak hot saponated solution of cresol and wrung out. One end of the pack is pushed through the cervix into the upper part of the vagina, from which it can be recovered in forty-eight hours. In rare cases in which the hemorrhage does not start until after the operation, when the patient has been returned to her room the cervix may be exposed with a speculum and steadied with a tenaculum, and a 10 yard (9 meter) strip of gauze which has been soaked in saponated solution of cresol and wrung out may be used to pack the uterine cavity. The vagina should also be packed tightly, as the packing may act by producing counter pressure against the uterine arteries or by reflexly stimulating uterine contractions. Because of the closed cervix this procedure is sometimes difficult or impossible to follow on primiparas who have not been in labor.

In cases of premature separation of the placenta in which the muscle fibers of the uterus have been dis-

sociated by the blood (uteroplacental apoplexy of Couvelaire), packing and the use of solution of posterior pituitary and ergot preparations are usually unavailing. In such cases supracervical hysterectomy is indicated as soon as it is determined that the uterus is incapable of contracting sufficiently vigorously to stop the postpartum hemorrhage after the removal of the baby and the placenta by cesarean section.

The fatal outcome is due in most instances to the failure of the medical attendant to recognize the nature of the complication promptly and to follow the diagnosis by swift and decisive action. In the obstetric department of the University of Illinois College of Medicine, for the past eleven years in 10,977 cases not a patient has been lost from this complication. As soon as the diagnosis is even probable, if conditions are unfavorable for immediate delivery from below the abdomen is opened, the baby and the placenta are removed and the uterus under the full stimulation of oxytocics is observed. If it responds by good firm contractions it is sewn up; if not, supracervical hysterectomy is done. There have been 144 patients whose condition was diagnosed premature detachment of the placenta, and 26 of these have been treated by cesarean section.

Repeated blood transfusions may be necessary in some cases, and therefore it is advisable to have more than one donor available. The well organized blood bank is a long step forward in preventing mortality.

Shock is not infrequently a cause of death after cesarean section. This may be due to loss of blood, prolonged and rough operating technic, nervous instability in the patient, especially if she is under 18, or exhaustion from pain and long labor. The onset of shock can usually be foretold if a close watch is kept on the blood pressure, and if appropriate measures are taken to combat it the danger can be minimized. Prophylactically, it is important to see to it that women in labor who may need a cesarean section have rest and sleep and that they do not become dehydrated. It is often a valuable procedure to postpone an indicated cesarean section for some hours if there is no emergency, until the patient can be built up by sleep, intravenous injections of dextrose and stimulants to help her withstand the operative shock. During operation careful handling of tissues, rapid smooth technic and limiting the loss of blood combine to minimize danger from shock. Postoperatively the patient should have blood replaced if the loss has been excessive and should be given oxygen and stimulants for weak cardiac action, such as digalen, dextrose given intravenously, epinephrine or nikethamide in full doses. Caffeine with sodium benzoate has also proved useful for some patients after recovery from the immediate symptoms of shock. Close cooperation between the anesthetist and the surgeon should minimize the danger of shock. The anesthetist is in a strategic position to observe the earliest signs of shock and to acquaint the surgeon with the fact of its presence and is able to lessen the degree of shock by lightening the anesthesia as soon as it is safe to do so.

Occasionally massive collapse of the lung may result fatally during or after cesarean section. This complication can be treated by the aspiration of mucus from the bronchial tree through the bronchoscope. Forced breathing of a 30:70 mixture of carbon dioxide and oxygen by means of a pressure bag attached to an

anesthetizing machine is also of value. Forcing a few whiffs of the mixture into the lungs under pressure will frequently result in a violent cough, the expulsion of the mucous plug and reopening of the collapsed portion of the lung. The oxygen tent as a temporary

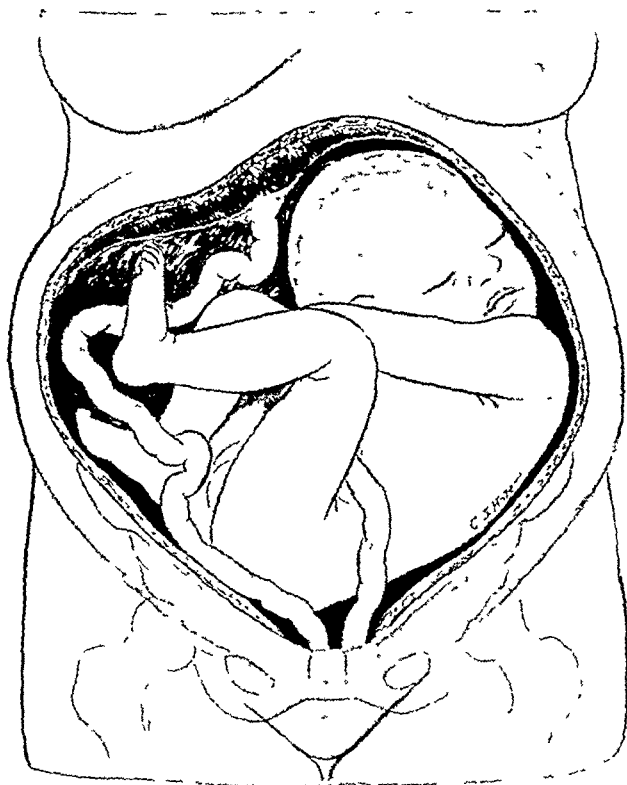


Fig. 1.—Uterus arcuatus. Postmature child. Transverse presentation and prolapsed cord with thin uterine wall.

expedient in the acute stage is valuable. Full cardiac stimulation is indicated.

Acute dilatation of the stomach is relatively frequent and may be a fatal postoperative complication of cesarean section. It is frequently associated with and part of paralytic ileus. It should be easily detected and can be treated by decompression of the stomach by the Wangenstein suction apparatus. The administration of stimulants in full doses is indicated. Prophylactically, the less the bowels are handled and the more rapidly and smoothly the operation is carried out the less tendency there will be for this complication to arise.

Since heart disease is recognized as an indication for cesarean section in some cases, cardiac failure may precede or follow operation. I believe that the danger of the operation hinges particularly on the degree of compensation manifest in a given case and how this may be influenced by medical management. If the condition is such that a few days rest in bed with proper elimination and cardiac stimulation results in restoring compensation, the patient will be a much better operative risk. When feasible, local anesthesia reduces the pulmonary irritation which may predispose to the development of pulmonary edema and pneumonia. The further the pregnancy can be carried the better the prognosis for the baby, up to the thirty-fourth week. A compromise may be necessary and operation performed between the twenty-eighth and thirty-fourth week if decompensation threatens the mother's life. When decompensation cannot be controlled before the infant is viable, I prefer emptying the uterus by vaginal cesarean section.

When pulmonary edema develops in a pregnant woman from any cause the first effort should be to remove the cause and reduce the edema. To this end fluids are restricted and rest in bed, administration of digalen and magnesium sulfate by mouth and inhalation of oxygen may be useful. In most cases operation may be deferred until after improvement in the pulmonary condition. The use of the Drinker apparatus in certain cases is of value before and after operation. If beginning pulmonary edema manifests itself early in the first stage of labor in a primipara it is usually better to operate at once and treat the edema postoperatively. The decompression of the uterus permits of much better ventilation of the bases of the lungs and improves the circulation by relieving pressure. If, on the other hand, the edema first appears during labor in a multipara, the dilatation of the cervix can usually be hastened by the use of manipulation, or Dührssen incisions may be employed with advantage to complete it. However, if even a moderate pelvic contraction is present it may be safer to do a cesarean section with the aid of local anesthesia.

Hypertension without convulsions increases the danger of pregnancy and labor by predisposing to serious toxic symptoms which may lead to a fatal outcome. Cerebral hemorrhage occurs in some cases, and anuria and uremia may be present and difficult to control. When the indication for cesarean section is not of an emergency character the patient should be put to bed and treated for the hypertension for at least a week before one resorts to surgical intervention. The operation is best done with local anesthesia without the use of epinephrine. In

the majority of cases if the hypertension is associated with chronic nephritis the interests of the patient are best subserved by the performance of sterilization at the time of operation. On the other hand, if the hypertension is rapidly advancing and of the eclamptogenic toxemia type and convulsions are imminent cesarean section, best done with local anesthesia, is imperative. When convulsions are present the seizures may cause extrusion of some of the abdominal viscera through the wound and may interfere seriously

with proper suture of the uterine and abdominal wounds, thus increasing the operative time, the danger of infection and the loss of blood. I feel that under these circumstances cesarean section with ethylene anesthesia is indicated. The technic should be especially guarded with regard to asepsis, since the patients stand

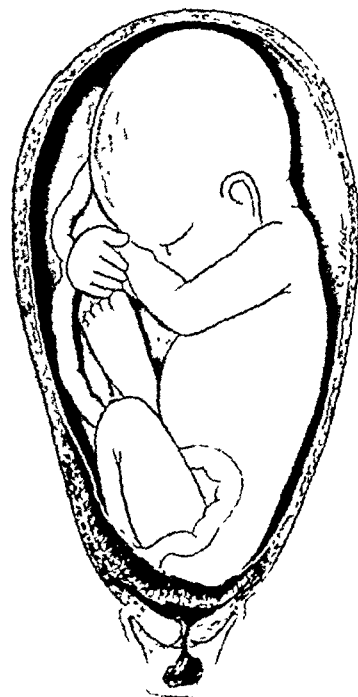


Fig. 2.—Placenta previa centralis. Also, late indication if fetus is viable. Danger of fetal death if labor starts is obvious.

infection poorly. Loss of blood up to 500 cc. should be encouraged if the patient is not anemic, since bleeding has long been known to be of value in such cases. One of the most important points in the postoperative management is to keep the patient to a strict dietary

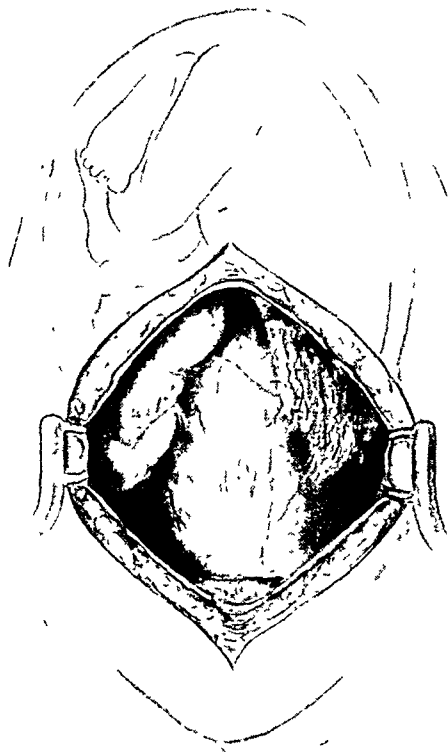


Fig. 3.—Previous cesarean section. Rupture may occur before or after onset of labor. Thinning and stretching of uterine scar and adhesions of bowel and omentum create special operative hazards.

regimen until the blood pressure has become reduced and the casts and albumin in the urine begin to disappear.

I wish it clearly understood that I do not advocate cesarean section for patients with eclamptogenic toxemia except those in whom the toxemia cannot be controlled by medical management, especially if they are primiparas, or in whom the symptoms develop in a fulminating manner which does not permit a trial of medical management. In a series of 1,000 cases of eclamptogenic toxemia, 37 mothers have been delivered by cesarean section with no deaths; of these, 12 had eclamptogenic toxemia of the convulsive type. Again I would stress the importance of decisive action. Procrastination and indecision are the cause of the mortality in such cases, not cesarean section. Naturally it does not take long for the rapidly shifting clinical picture to develop to a stage at which the cerebral edema, hepatitis, nephritis and myocarditis make operative intervention virtually the same as manslaughter.

Sometimes a patient with an acute infection outside the generative tract must have a cesarean section to save her life, the life of the baby or both. Fortunately such patients are extremely rare, but one does well to remember that they do exist and must be cared for. If the infection is not too near the midline of the abdomen the dangers of directly contaminating the peritoneal cavity are not great. The prophylactic removal of the uterus by Porro section is recommended, because it

automatically removes the danger of puerperal sepsis and so leaves one with but one danger (peritonitis) to combat instead of two. The prophylactic use of immune serum and of sulfanilamide derivatives (about 60 to 80 grains [4 to 5 Gm.] a day) is desirable and should be started immediately after operation.

Occasionally the bladder or the bowel is injured during cesarean section. The accident is not so serious as a rule if the hole is found and carefully repaired. The patient is given a urinary antiseptic, and an indwelling catheter is kept in the bladder for twelve days. Injury to the bladder is most likely to follow the low cervical and Porro operations. When injury is suspected but not proved, a catheter should be passed and the bladder distended with boric acid solution containing methylene blue to reveal the location of the hole. Peritonitis from an unrecognized injury of the bowel or extravasation of urine from an overlooked injury of the bladder may be fatal.

Ruptured membranes increase the danger of cesarean section because of the increased likelihood of bacterial contamination of the uterine cavity. The mother is jeopardized primarily because of the possibility of infected uterine spill contaminating the peritoneal cavity and starting general peritonitis and secondarily because puerperal sepsis may develop in the uterus and spread to other parts of the body. Again the time element is all important. Operation within a few hours after rupture entails practically no additional risk. After the fourth hour, however, the danger rapidly increases. As a corollary, therefore, one may say that given a patient who may have to be delivered by cesarean section one may view with complacency the early stage of labor as long as the membranes remain intact. However, with their rupture the situation should be carefully

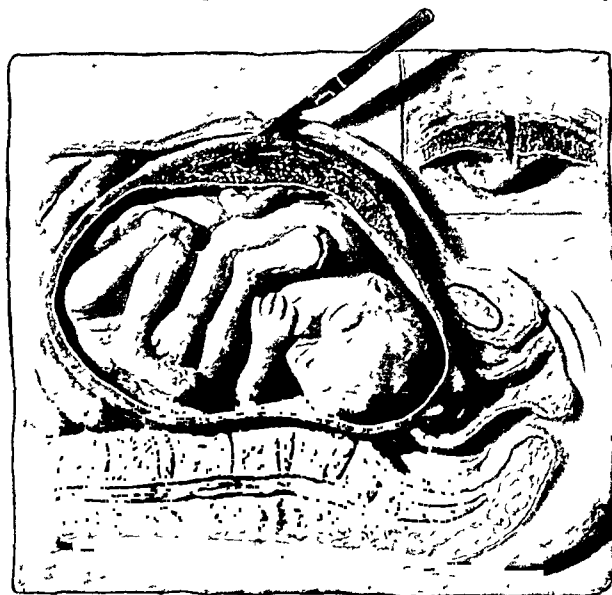


Fig. 4.—Placenta on anterior wall. Dangers: increased loss of maternal blood owing to vascularity at site of incision. Fetal hemorrhage from incision of placental vessels.

and critically studied and the decision to deliver by cesarean section elected or rejected and the treatment followed through on the lines given here. Neglect of this precaution will lead frequently to fatal complications even though ultimately a Porro cesarean section is done to minimize the danger from infection. At best

this is a makeshift procedure designed to salvage something from a serious situation produced too often by neglect or by ultraconservatism. In the presence of frank infection one should seriously consider a craniotomy, even though the heart tones may be thought to be present, if the fetus seems to be in bad condition and a high forceps operation fails after moderate traction.

I believe cesarean section is practically always indicated for central placenta previa and for the other types as well when the antepartum hemorrhage is profuse and the mother is in danger therefrom. In cases of partial separation in which there is only moderate hemorrhage and the fetus is just viable the decision to do a cesarean section or to deliver from below is a difficult one. If the patient is in labor she may be permitted to go on under close observation and a cesarean section performed if the heart tones become rapid or weak. If she is not in labor I give progesterone to inhibit uterine contractions and try to keep labor and hemorrhage from recurring until the baby is fully viable, at thirty-two to thirty-four weeks. Such management is justifiable only for hospitalized patients.

Pulmonary embolism is a rather infrequent complication after cesarean section. I feel that it is practically always associated with infection and that all patients who show evidence of thrombophlebitis of the broad ligament or the femoral veins should be kept at absolute bed rest for twenty-one days or until one can be reasonably sure that the clots in the femoral and iliac vessels have had time to organize sufficiently so that they will not be dislodged.

FETAL DANGERS

Various complications of labor as far as the fetus is concerned may indicate cesarean section. When prolapse of the cord occurs in a primipara with a cervix only a few centimeters dilated delivery by cesarean section is much safer. The danger lies in the fetal asphyxia which is apt to be present before the patient is operated on.

Nephritic toxemia in the mother not infrequently results in premature intrauterine fetal death. This regrettable accident is entirely unpredictable according to my experience. Abdominal hysterotomy should be done as soon as it is felt that the baby has a good chance of surviving after birth (at about the thirty-fourth week).

Habitual death of the fetus is a condition which requires the nicest judgment to determine when to invade the uterus and deliver a live baby. No premonitory signs or symptoms are present. One has to rely on the history to tell when one may expect the death of the fetus and act before this accident occurs.

Another danger to the fetus results from cutting of the large vessels of the placenta or the cord when the incision in the uterus overlies the site of placental attachment. Serious hemorrhage into the amniotic cavity from the fetal circulation may occur unless the baby is rapidly extracted and the cord compressed.

Acute placentitis often results in fetal septicemia, which frequently is fatal to the baby even if it is extracted by cesarean section. This complication most frequently follows premature rupture of the membranes.

Death of the mother as the result of either accident or disease should always be an indication for cesarean section if a viable fetus is present. When it is obvious that the mother is dying it may give the fetus a better

chance if one performs the operation before the death of the mother than if one waits until she dies. Permission should always be obtained for this operation, but I have twice performed it without the permission of the family in an emergency, after hurried consultation with other physicians present, and have saved the infant each time.

Several hours after delivery babies extracted by cesarean section not infrequently have cyanotic spells which gradually deepen and finally end in death. The cause is obscure. Potter has found an unusual amount of cerebrospinal fluid and has expressed the belief that this may produce pressure on the respiratory center. Oxygen inhalations and stimulants are indicated but are not very effective in combating the condition.

Occasionally a cesarean section is undertaken, usually by a general surgeon in consultation with a general practitioner, even when labor has progressed to the stage at which the fetal head is deeply engaged. Under these circumstances serious injury may be done to the baby from forcible efforts at extraction of the head from the pelvis after the uterus is open. I know of 2 cases in which the baby was decapitated, and in both the mother died from hemorrhage before leaving the operating room. It is well, therefore, to be sure the head is not deeply engaged or can be disengaged before one attempts cesarean section.

Rupture of the scar from a previous cesarean section is practically synonymous with fetal death, and there is no practical way to prevent it except through anticipating the rupture by doing a second cesarean section before the rupture occurs. Unfortunately the accident can occur before the woman has had any labor pains. It rarely occurs, however, until after viability of the baby is established. Therefore if there is a history of febrile convalescence from the first operation one may assume a weakness of the scar and do a cesarean operation prophylactically after the fetus becomes fully viable.

The maternal mortality from this form of rupture of the uterus is low compared with that of rupture during labor. Because of the cicatricial nature of the edges of the rupture hemorrhage is not a serious complication as a rule.

A study of the records of the pathologic department of Cook County Hospital shows the outstanding cause of maternal mortality in cases in which cesarean section is done to be ruptured uterus.

CONCLUSIONS

It will be seen that the mortality from cesarean section both early and late for the mother and the baby is dependent not so much on the operation as on the indication for which the operation is undertaken and on the proper time of the operation in relation to the onset and course of the complication. In certain instances quick, decisive action is imperative, even in the presence of serious complications which under ordinary conditions would contraindicate major surgical procedures. In other circumstances conservatism until the patient can be placed in the best possible shape for major surgical intervention is indicated.

Careful evaluation of the factors involved in all complicated obstetric cases should be made, if possible, prior to the onset of labor and a plan of action outlined which will be thoroughly understood by the patient as well as

by the attending physician and his associates. Only in this way can one avoid the dangerous situations which arise because of unwarranted procrastination and are responsible for the greater percentage of deaths both maternal and fetal which are charged to cesarean section at the present time.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. COSGROVE AND NORTON AND DR. FALLS

DR. LOUIS E. PHANEUF, Boston: Drs. Cosgrove and Norton have emphasized the most important factor in cesarean section, namely individualization of the patient. While the classic operation may be a satisfactory method for the clean patient, it cannot be employed with the same safety in the contaminated gestant. The several procedures described were devised in the course of years as experience increased. I myself use the low flap operation in all clean cases; the peritoneal exclusion technic, of which there are two varieties—the Veit-Fromme-Hirst, with a longitudinal incision in the uterus, and the recently devised Erwin F. Smith technic with a transverse incision in the lower segment, for the presumably infected woman. The extraperitoneal procedure, either the Latzko or the Waters operation, is used for the frankly infected patient, and finally the temporary exteriorization of the uterus, the Gottschalk-Portes operation, or the Porro operation in the badly neglected parturient. Whether one makes a transverse or a longitudinal incision in the lower segment is a matter of individual preference. I favor the transverse incision. By following the recommendations presented in the paper, that is, proper selection of operation, maternal mortality in cesarean section could be reduced to its minimum figure. Dr. Falls has covered the causes of early and late mortality in cesarean section. The three outstanding causes of mortality have been, from the earliest times of the operation, hemorrhage, sepsis and pulmonary complications. Hemorrhage has been controlled to a great extent by prophylaxis on the one hand and by blood transfusions on the other. The replacement of blood has become a very simple procedure. The blood is usually administered without even moving the patient from her bed. If we go back a little more than two decades we find that then the blood transfusion was more of an operation than the cesarean section itself, showing the marked improvement in the replacement of blood. Improvements from infection have come through two avenues: (1) from the better understanding of obstetrics, resulting in operating early in labor, before contamination has occurred, and (2) by choosing the proper method for a given case, as exemplified in the first paper. There is hope that the sulfonamides may still further aid in reducing the infections of childbirth. Pulmonary complications can be reduced by the more general use of local infiltration anesthesia in the performance of abdominal delivery. While the technic is more meticulous and slightly more time consuming, both patient and obstetrician are rewarded by the smoother convalescence and the reduced complications.

DR. H. HUDNALL WARE JR., Richmond, Va.: My associates and I use the low classic operation in the elective cases when the patient is not in labor, and our results in this group have been good. If one decides to deliver a patient by abdominal operation under other circumstances, a careful estimation of a number of factors must be made before the type of procedure is selected. The type of operation should depend on the patient's general physical condition, age, the number of children and the amount of manipulation, with attendant trauma and possibly infection to which the patient has been subjected during labor. The low cervical or double flap operation is preferred in cases in which the membranes have ruptured, active labor has started or unquestioned sterile vaginal examination has been made. In probably or obviously infected patients and in all patients in whom unsuccessful delivery has been attempted from below, either the extraperitoneal or a modified Porro operation should be performed if abdominal delivery seems necessary. At the Medical College of Virginia Hospitals during the past five years,

30 patients have been delivered either by the modified Porro operation or by cesarean section followed by hysterectomy. There was only one death in this group, and autopsy showed that this patient had a severe pyelonephritis. The newer types of cesarean operations have reduced the mortality rate for operative cases, but the modified Porro operation still has a definite place for a small group of neglected obstetric patients.

DR. JOSEPH B. DE LEE, Chicago: The frequency of cesarean section in this country is out of all proportion to the necessities and contributes largely to our continuing high maternal mortality, although, in general the country over, the mortality is being reduced. The cesarean operation has partaken of that improvement which all surgical procedures have enjoyed, and that is one of the reasons doctors resort to it so often. I was hoping that I would live to see the day when craniotomy on the living child would be obsolete, but that is not yet true. Cases in which craniotomy on the living child are indicated are very few in number compared with the olden time. The essence of Drs. Cosgrove and Norton's paper was the difference between the intraperitoneal and the extraperitoneal approach to the lower uterine segment in cases of infected labors. In 1920 to 1929 we had much discussion about the values of these two operations, the Latzko extraperitoneal and its modifications, and the direct transperitoneal or intraperitoneal approach that Veit, Froome, Sellheim, Beck and others have perfected. At that time we found that the difference in mortalities was not significant, that the peritoneum would take care of a lot of infection and that the connective tissue was not any more resistant to infection than the undamaged but closed peritoneal cavity. However, perhaps there might be a little greater advantage in the extraperitoneal approach. Local anesthesia was mentioned by Dr. Falls. I think that local anesthesia should be the method of choice in all cases, and of cesarean section particularly. The shock which Dr. Falls mentioned I have found present only in women who are likely to have shock from other causes than the operation—heart disease, pulmonary affairs and toxemias. In a woman who hasn't these conditions, shock is very rare under local anesthesia. At the Lying-in Hospital in Chicago we have had about 1,500 cases under local anesthesia. We have yet to see a massive collapse of the lung. In fact, we have had no deaths from anesthesia in over 1,500 cases of local anesthesia in cesarean section. I feel, in spite of the wonderful results shown by Drs. Cosgrove and Norton, that spinal anesthesia has inherent dangers which make it unwise when one can do the same operation just as well with local anesthesia. Of the difference between the old classic and low cervical cesarean section, I feel that the old classic cesarean section should, with almost no exception, be called obsolete. If, however, one feels that one must do an old classic cesarean section, I would recommend the low operation modified by Dr. Schumann of Philadelphia, in which he makes a flap, a sort of little trap door, in the lower part of the uterus and then, pushing the cover of the door aside, makes the incision.

DR. JAMES F. NORTON, Jersey City, N. J.: We have nothing much to offer in closing. I agree with Dr. DeLee that there is a lot to say about cesarean section. We presented just one phase, the management of women long in labor, with membranes ruptured, with the presenting part fixed at the inlet, not engaged, who have had sometimes many vaginal examinations, many rectal examinations, and on whom occasionally an unsuccessful attempt has been made to deliver through the birth canal. We are confronted with that problem all too frequently, and to circumvent the disastrous consequences of transperitoneal section we have utilized, in quite a number of cases, an extraperitoneal approach to the lower uterine segment. We offer for comparison a morbidity study of the low cervical, the classic and the extraperitoneal group, and we feel that we have something that serves us well in a very difficult situation. Since our clinic was opened we have had about 50,000 women. We have not done one craniotomy on a living child; it is passé as far as we are concerned. Of the four deaths in the extraperitoneal group of cesarean section, in a study of 209 patients I was in labor for fifty-four hours with ruptured membranes had an intrapartum rise in temperature to 103.4 F. before she was operated on and under any obstetric management at all

would have been a very formidable problem. One death, I think, is related to the operation, severance of a ureter and general sepsis, but at postmortem examination I think the strongest argument we have for utilizing the true extraperitoneal type of incision came from this case of severance of a ureter in an individual who had previously a pyelitis, that is, an intrapartum pyelitis. The peritoneal cavity was not infected. The patient died of general sepsis but did not have a proved peritonitis at postmortem examination. We had one death from hemorrhage, and hemorrhage is inherent in all cesarean section problems. We had one death which has been called acute heart failure for want of ability to define it more accurately; it might well have been any number of things. We were not able definitely to assess truly the cause of the death. That death and the hemorrhage death and the death of the woman long in labor may have occurred from any type of operation, which really leaves us with one death truly assessable against an extraperitoneal infection, and that in an individual who at postmortem examination did not have a peritoneal infection.

DR. FREDERICK H. FALLS, Chicago: I did not discuss the cause of fetal mortality in the paper. The prolapse of the cord in an undilated cervix is the important reason for cesarean section from the standpoint of the fetus. In partial premature detachment of the placenta, if the hemorrhage is only minor and stops, it is best to allow the woman to go on and take the chances of delivery from below, but, with a continual trickle of blood and not knowing what is going to happen to the placenta, I feel that cesarean section is the best way out of the difficulty. As soon as the membranes rupture, a new element enters the obstetric case and the case should be reevaluated. The question of a moderately contracted pelvis, and of toxemia, coupled with early rupture of the membranes should mean that the case is reevaluated in the light of the new accident, which may be the determining factor in delivering the patient by cesarean section instead of from below. Another factor which occurs in causing mortality is pulmonary embolism, which in my opinion is always due to infection. The infection many times is low grade, and it is a thrombophlebitis of the veins of the pelvis and is often overlooked. So, given a woman having a low grade temperature, with a moderate tenderness in the region above Poupert's ligament, I watch the patient very carefully until satisfied that there is no thrombophlebitis of the veins. There is some question as to whether continuous or interrupted suture is the best method of repair after the low cervical operation. I have used the continuous suture many years. In closing, it is a pretty thin piece of uterine muscle and in the presence of hemorrhage there is a tendency for the operator to pull the suture tight to stop the hemorrhage. The hemorrhage is not occurring from that wall; it is bleeding from inside the uterus, and it doesn't make any difference how tight you pull these sutures, it won't stop the hemorrhage, and if you pull them tight there is the possibility of a slough in that uterine wound.

The Human Factor in Aviation.—Man has manufactured a machine to which he is inferior so far as operating efficiency is concerned. To a certain extent, rules set up to govern his action overcome the difficulty. . . . But rules cannot be devised which will insure proper action in every emergency. Ultimately such action will depend on the good judgment of particular men, and what the aviation industry is trying to do is make sure that its pilots are the sort of men who will exercise good judgment. It is trying to devise physiological and psychological methods by which it will be able (1) to select the proper persons as pilots, (2) to maintain them at their maximum efficiency and (3) to eliminate those who fall below an established level. Pilots must be absolutely normal men, physically, mentally and spiritually. The industry is trying to find standards for choosing such men and determining whether they remain so. So far it has been successful only in certain respects. Here is the problem of research in the human factor in aviation. —Fatigue of Workers, Report of Committee on Work in Industry of the National Research Council, New York, Reinhold Publishing Company, 1941.

THE MILLER-ABBOTT TUBE IN SURGERY

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AND

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Since the introduction of the Miller-Abbott¹ principle of intubation of the small bowel for the management of ileus by Abbott and Johnston,² the morbidity and mortality in our series of cases of this disease has been reduced to an all time low figure.³ Although often eliminating some surgical procedures, the technic should not be considered as a nonoperative method of treatment but rather as an adjunct to proper surgical care.

We continue to advise immediate operation in cases of strangulated hernia or other obvious early mechanical obstructions with mild distention and, of course, all cases suspected of gangrene of the bowel. Continuous gastric or duodenal suction and other simpler therapeutic measures are still used in many cases of mild involvement in which there is moderate distention, particularly in the early postoperative period. In the cases reported here either mechanical obstructions were demonstrated at operation or distended loops of small bowel with fluid level formation appeared when viewed radiographically.

OBSTRUCTIONS OF THE SMALL BOWEL

The immediate therapeutic problem in noninflammatory obstructions of the small bowel, either paralytic or mechanical, is the restoration of fluid balance and body nutrition while distention is controlled and an accurate diagnosis is made. We have classified as "paralytic obstructions" all cases in which a mechanical obstruction was not demonstrated by intubation of the small bowel. It is recognized that sufficient motor activity is present after deflation to pass the Miller-Abbott tube along the entire length of the small bowel. The term is retained, however, since it is generally accepted by the profession and it is our impression that active peristalsis is either absent or greatly depressed before deflation is accomplished.

Our cases in the paralytic group were associated with lesions of the spinal cord due to trauma or infection, retroperitoneal hemorrhage or infection, pneumonia, renal stones and surgical trauma of the abdominal viscera and included a few cases that appeared to be either augmented by or caused by edema of the bowel.

The group of cases thought to be due to edema of the bowel was of considerable interest, since this factor is not generally recognized. Two occurred in the early postoperative period in patients having a low plasma

From the Department of Surgery of the Presbyterian Hospital and Columbia University College of Physicians and Surgeons.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Miller, T. G., and Abbott, W. O.: *Intestinal Intubation: A Practical Technic*, Am. J. M. Sc. 187: 595-599 (May) 1934.

2. Abbott, W. O., and Johnston, C. G.: *A Nonsurgical Method of Treating, Localizing and Diagnosing the Nature of Obstructing Lesions*, Surg., Gynec. & Obst. 66: 691-697 (April) 1938. Abbott, W. O.; *The Treatment of Intestinal Obstruction and a Procedure for Identifying the Lesion*, Arch. Int. Med. 63: 453-468 (March) 1939. Johnston, C. G.; Penberthy, G. C.; Noer, R. J., and Kenning, J. C.: *Decompression of the Small Intestine in the Treatment of Intestinal Obstruction*, J. A. M. A. 111: 1365-1368 (Oct. 8) 1939.

3. Leigh, O. C.; Nelson, John A., and Swenson, P. C.: *The Miller-Abbott Tube as an Adjunct to Surgery of Small Bowel Obstruction*, Arch. Surg. 111: 186 (Feb.) 1940.

protein who had been given large quantities of intravenous physiologic solution of sodium chloride. In 1 case 8 liters and in a second case 11 liters of fluid was aspirated through the Miller-Abbott tube from the upper part of the gastrointestinal tract during the first twenty-four and thirty-six hours respectively. The depressed motor activity of the intestine was evident by the extremely slow progress of the tube through the bowel.

Recently a man aged 51 was admitted to the hospital for extensive second and third degree burns of the right side of the body. On the fourth hospital day there was severe abdominal distention (fig. 1), nausea, vomiting and generalized edema. His total body weight had increased 6 pounds (2,722 Gm) and the plasma proteins had decreased from 7.11 to 5.50 Gm. per hundred cubic centimeters. Proctoscopic examination revealed pale, edematous mucous membrane of the rectum and lower part of the sigmoid flexure having the general appearance of mucosa after the submucosal injection of saline solution. The Miller-Abbott tube was passed into the upper part of the

injected through the tube to identify the exact location and often the nature of the obstruction. Small inflammatory adhesions or knuckles of bowel which prolapsed into small defects in the peritoneum in the early postoperative period have been demonstrated in many

TABLE 2.—Summary of Obstructions with All Varieties of Peritonitis Treated with the Miller-Abbott Tube and Surgery

Result of Intubation	No. of Cases	Operations for Ileus	Died	Per Cent Mortality
Tube passed into small bowel	70	20	11	15.7
Tube failed to pass into small bowel..	24	4	9	37.5
Total	94	24	20	21.3

patients thought to be suffering from paralytic ileus. The tube has been particularly helpful in guiding the surgeon to the offending lesion in cases of widespread postoperative or postinfectious adhesions. In long-standing cases with considerable inanition, secondary

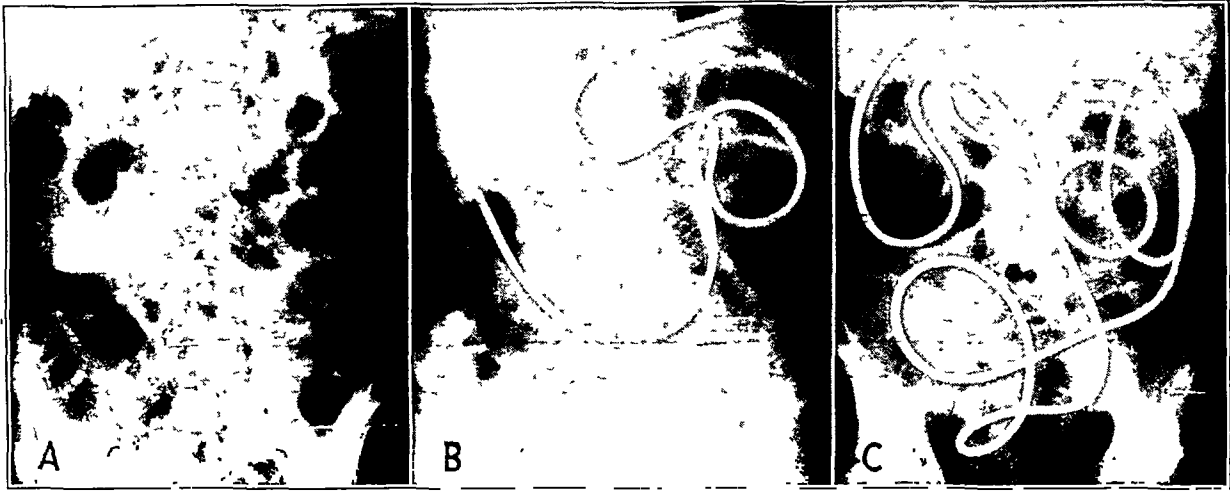


Fig. 1.—Acute ileus due to edema of the bowel. A, appearance of abdomen showing distended small bowel in a patient with extensive second and third degree burns and hypoproteinemia. B, showing the failure of the tube to advance because of poor peristaltic activity of the bowel. C, the rapid advance following diuresis

jejunum but advanced slowly, owing to the depressed motor activity of the bowel. Spontaneous diuresis occurred two days later after the administration of 1,000 cc. of plasma intravenously and the continuous removal of fluids from the upper part of the small bowel. The tube, which had advanced only

TABLE 1.—Summary of Noninflammatory Obstructions of the Small Bowel Treated with the Miller-Abbott Tube and Surgery

Type of Obstruction	No of Cases	Operations for Ileus	Died	Per Cent Mortality
Paralytic type	77	5	5	6.5
Mechanical type	12	10	6	46
Total	209	108	11	5.7

2 feet (61 cm) during the first two days of intubation, passed rapidly into the transverse colon as the edema and ileus disappeared.

Heretofore, the administration of barium sulfate by mouth in cases of ileus has been of little value to the radiologist. The opaque medium was so diluted by the fluid accumulated in the distended proximal loops of intestine that it was practically useless. Now, after deflation, small amounts of barium suspension can be

to a partial or recurrent obstruction, the tube may act as an ileostomy over a prolonged period while the patient is adequately prepared for operation by oral feedings. If the resection of a pathologic loop is necessary, the preliminary deflation is extremely helpful. The distended proximal loops are reduced to almost normal size before resection is attempted and the anastomosis protected postoperatively by maintained decompression.

Two hundred and nine cases of noninflammatory obstructions have been subjected to intubation, with 11 deaths, or a mortality of 5.3 per cent. Two of the deaths listed as "paralytic obstructions" occurred in cases of terminal renal failure and death resulted from uremia after partial deflation had been accomplished. Five of the deaths in the mechanical group occurred in cases of generalized carcinomatosis in which death occurred after the obstructions had been relieved. The mortality for ileus alone in this group was 4 deaths in 202 cases, or approximately 2 per cent.

OBSTRUCTIONS WITH ALL VARIETIES OF PERITONITIS

It is our impression that obstructions secondary to an inflammatory process in the peritoneal cavity may be either paralytic or mechanical or both. We con-

sider this group of cases separately, since the therapeutic problem is immediately changed by the presence of the infectious process. The dramatic improvement that follows successful intubation seems to indicate that deflation improves the circulation of the bowel and prevents spread of the infection. A comparison of the mortality in the cases in which intubation was accomplished successfully (table 2) with the cases in which the tube failed to pass the pylorus shows the advantage of prompt deflation.

Most of our failures occurred in this group of seriously ill patients. We used to hesitate to subject these patients to the added discomfort of repeated fluoroscopic examinations but we now feel that the results more than justify the procedure.

Localized abscesses or early peritonitis often involves and obstructs the small bowel either by inflammatory edema per se or by causing angulations that result in mechanical obstructions (fig. 2). Prompt deflation allows adequate food and fluids by mouth until the

bowel interferes with the circulation and leads to edema, poor motor activity and decreased absorptive function of the bowel. When pressure is applied along the suture line of a fresh anastomosis it may lead to tissue ischemia, necrosis, leakage of intestinal contents and the formation of fistulas or peritonitis.

TABLE 4.—Obstructions of Small Bowel with Gangrene

	No. of Patients	Died	Per Cent Mortality
Before Miller-Abbott tube, 1936-1937....	13	9	69.2
After Miller-Abbott tube, 1938-1940.....	20	11	55.0

In our experience, patients requiring resection of the colon or rectum and those with serious infections of the peritoneal cavity are most likely to have these complications develop. If intubation is delayed until extreme distention has developed, the passage of the tube into the small bowel is always difficult and sometimes

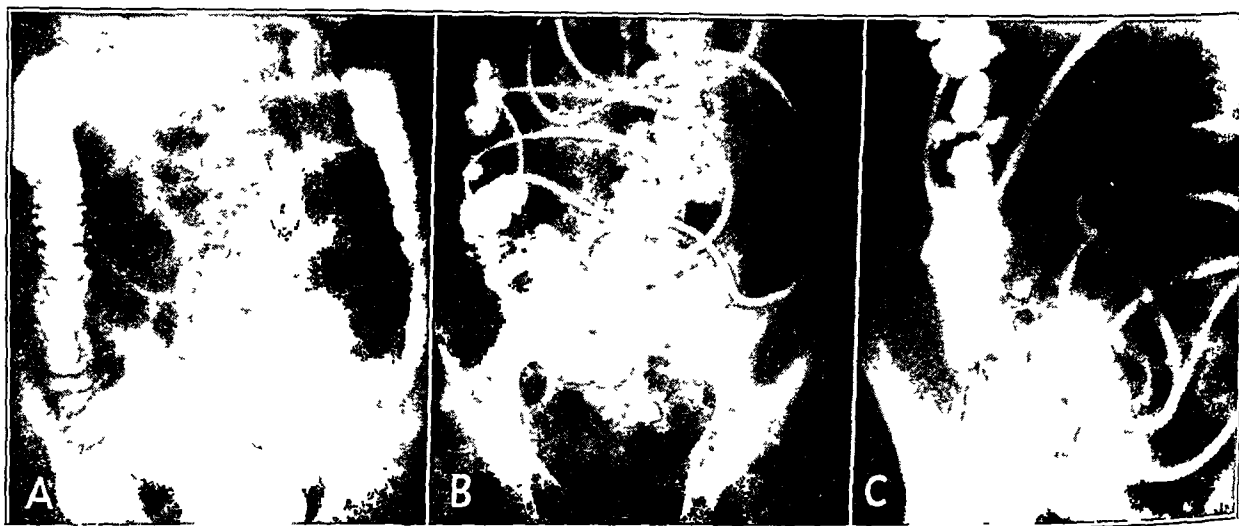


Fig. 2—Acute diverticulitis with localized peritonitis and acute ileus. A, plain roentgenogram of abdomen with colon filled with barium sulfate showing distended loops of small bowel. B, after deflation the tube arrested in the region of localized peritonitis. Barium injected showed a partial obstruction thought to be due to angulation of the bowel involved in the inflammatory process. C, the tube at the cecum five days later. The obstruction disappeared as the infection subsided.

infection subsides and the temporary obstruction is relieved. If the distention is allowed to persist, the distended loops are fixed in abnormal positions by fibrous adhesions that often lead to permanent obstructions (fig. 3).

TABLE 3.—Radical Resections of Colon and Rectum for Carcinoma 1938-1940 Inclusive

Type	Without Maintained Decompression			Decompression Maintained Before and After Operation			Total		
	No	Died	Per Cent Mortality	No	Died	Per Cent Mortality	No	Died	Per Cent Mortality
Right colon	10	3	30.0	17	0	0	27	3	11.1
Left colon	57	11	19.3	22	3	13.7	79	14	17.7
Rectum...	37	7	18.9	31	1	3.3	68	8	11.8
Total	104	21	20.2	70	4	5.7	174	25	14.4

PROPHYLACTIC USES OF THE MILLER-ABBOTT TUBE

Intubation of the small bowel is equally important to the surgeon in the prevention of distention in a selected group of cases in which the disease or operation may cause prolonged impairment of gastrointestinal activity. Distention occurring within the lumen of the

impossible. On the other hand, intubation is relatively simple if done before operation or early in patients with peritonitis before distention has occurred. We therefore advise prophylactic intubation in these patients.

Our results in a small but well controlled group of consecutive cases of radical resections of the colon and rectum for carcinoma seems to indicate that preoperative intubation with maintained decompression in the early postoperative period has reduced the mortality by avoiding some of the serious complications often encountered in these cases.

The use of chemotherapy, improved anesthesia, controlled fluid therapy and the vitamins has improved the results in all our cases during the past few years. The improvement is most striking, however, in the cases in which the tube was passed before operation and decompression was maintained until normal bowel function was reestablished.

Our attending surgeons agree that prophylactic decompression is ideal in the one stage operations of the ascending colon. The arguments in favor of the two stage operation of the ascending colon were based on the dangers of leakage from the ileocolostomy done at the time of resection. With the maintenance of

deflation before and after operation, the one stage procedure is now safer because it eliminates the dangers of two operations and two anesthetics as well as the difficulties often encountered with inflammatory adhesions at the second operation.

For lesions of the descending colon or rectum with uncontrolled distention on admission, cecostomy appears to be the treatment of choice. Prophylactic intubation in these cases is of course unnecessary. If no distention is present, the preliminary cecostomy can be avoided by use of the tube. Although a relatively simple operation, cecostomy may cause serious infections and often prolongs the period of hospitalization at least two or three weeks. The results in this group appear to justify our impression that some of the serious complications can be avoided. Our attending surgeons, however, have not accepted prophylactic decompression in the descending colon and rectal cases as enthusiastically as in cases of the ascending colon.

It is even more difficult to present clearcut data to show our impression that maintained decompression has prevented some of the complications that usually follow serious infections of the peritoneal cavity. Here again other factors have contributed to a general improvement of all our cases, but the following figures appear significant:

In the 1,075 cases of acute appendicitis with associated lesions treated during the five year period before the introduction of the Miller-Abbott tube (1933-1937 inclusive), 6.75 per cent (68 cases) were classified as diffuse or generalized fibropurulent peritonitis, with a mortality of 20.6 per cent. Of the 726 cases under treatment since the introduction of the Miller-Abbott tube (1938-1940 inclusive), 3.4 per cent (25 cases) were classified as diffuse or generalized fibropurulent peritonitis, with a mortality of 12 per cent. In other words, our complicated cases occur about one half as often, with approximately one half the previous mortality.

OBSTRUCTIONS WITH GANGRENE OF THE BOWEL

We continue to advise immediate operation in all cases suspected of gangrene of the bowel. Our criteria for suspecting gangrene are (1) a history of the sudden onset of pain that persists between the attacks of crampy, colicky pain, (2) localized tenderness or a palpable mass and (3) an elevated temperature, pulse and white blood cell count which do not return to normal after adequate fluids have been administered.

The mortality in this group continues at the same high figure as before the introduction of the Miller-Abbott tube. Three of the deaths occurred in cases in which there was profound shock when first seen, too late for any type of treatment.

Operations were unfortunately delayed on 3 patients in spite of the fact that several of the criteria for gangrene persisted after partial deflation and administration of adequate fluids. One is lulled into a false sense of

security by the temporary improvement which follows intubation of the small bowel. Deflation can be extremely helpful if used intelligently during the short preoperative period required to prepare these patients for operation and in the usually stormy postoperative period that follows. Gangrene should be suspected on admission, and the apparent improvement that follows should not cause the surgeon to overlook his original diagnosis.

Gangrene of the bowel is an admitted hazard to intubation of the small bowel. However, this type of case comprises only 5 to 10 per cent of the total cases of ileus and is not a valid excuse for depriving the remaining 90 to 95 per cent of the cases of the advantages to be gained by it.

COMMENT

Intubation of the small bowel can be most successfully accomplished if it is supervised by some members of the staff familiar with the method. We do not wish to imply that the technic requires special training, but it does require considerable time and careful attention. In

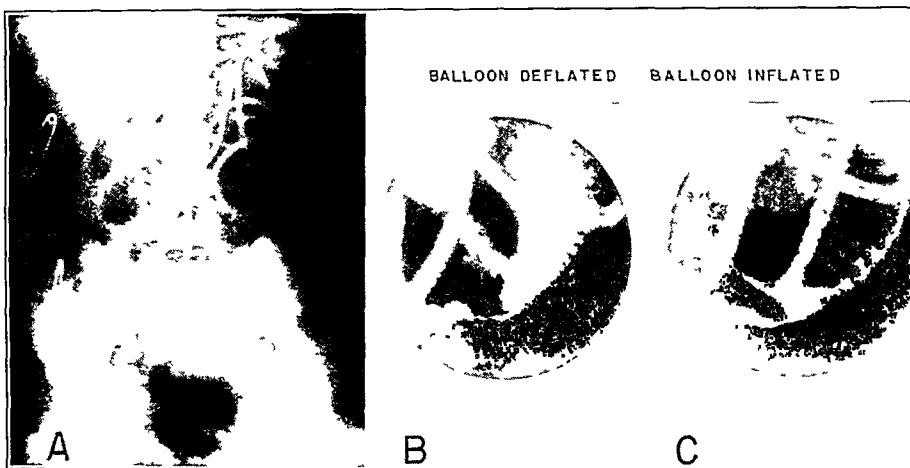


Fig 3—Generalized peritonitis with permanent obstruction following acute appendicitis. A, Plain roentgenogram of abdomen on eleventh hospital day showing Miller-Abbott tube arrested in left lower quadrant. Pressure roentgenograms at the point of obstruction after the injection of barium. B, with the balloon deflated and C, the balloon inflated. Patient maintained in satisfactory nutritional state by continuous suction and oral feedings until fibrous adhesions were divided at operation on thirty fourth hospital day.

this hospital, one of the senior surgical residents and one of our graduate nurses have been assigned to the patients requiring intubation in the various parts of the hospital. With the constant cooperation of the members of the department of radiology, we have now attempted

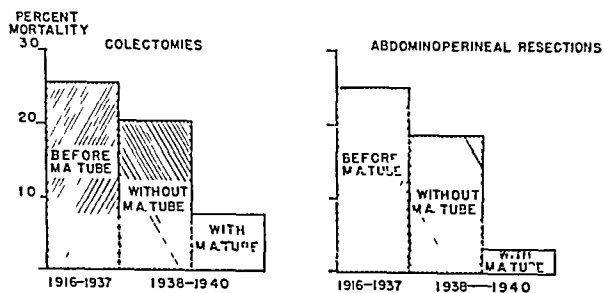


Fig. 4.—Radical resections of colon and rectum for carcinoma.

more than four hundred intubations with less than 10 per cent failures.

The busy surgeon of today is not expected to do the detailed work required for successful intubation, but

he must know that intubation of the small bowel cannot be successfully accomplished by haphazard attempts within a short period of time. A lack of understanding on the part of the attending surgeons has been responsible for the slow acceptance of this important contribution to abdominal surgery.

SUMMARY

Intubation of the small bowel in cases of intestinal obstruction has diagnostic and therapeutic value. Our mortality and morbidity rates for this condition have reached an all time low since the introduction of the Miller-Abbott tube.

2. Figures presented show that maintained decompression will reduce the mortality in cases of radical resection of the colon and rectum, and our impression is that maintained decompression will prevent the serious complications of serious infections of the peritoneal cavity.

3. Gangrene of the bowel continues to be an admitted hazard to intubation of the small bowel, but the possible harm that may be done in this small group of cases is not a valid reason for depriving the greater percentage of cases presenting obstructions of the advantages gained by its intelligent use.

630 West 168th Street.

ABSTRACT OF DISCUSSION

DR. GROVER C. PENBERTHY, Detroit: When the use of the long tube was first advocated by Johnston and Abbott there was skepticism in the minds of a great many because of the danger of relying on the Miller-Abbott tube as a possible cure-all for intestinal obstruction. There can be no doubt about the efficacy of the suction drainage by the Miller-Abbott tube in the great majority of acute and chronic obstructions and the obstruction due to adynamic ileus. The tube can never replace surgical treatment. If the diagnosis of strangulation is made, the treatment should be early surgical exploration, especially with the history of acute onset of pain in the abdomen, localized tenderness and recurrent colic-like pain. There should be no delay except to allow for a minimum of time for hydration, blood or plasma infusions. The immediate important problem is not the distention, although that may be troublesome. The primary difficulty is the inadequacy of the mesenteric blood supply. This can be accomplished only by surgical intervention. On the other hand, simple adynamic ileus should not be treated surgically. In a paper presented before this section in 1938 by our group it was stated that "the advantages of the method in properly selected cases are as follows: 1. It carries the patient past the period when operation is most dangerous. 2. It prepares the patient for operation by control of distention, thus making operation less traumatic for the patient and easier for the surgeon. 3. It affords a means of localizing the site of obstruction and frequently indicates its nature. 4. It permits oral feeding of the patient during a period when food and fluid are so essential and frequently has permitted us to improve the patient's nutritional state during the period of treatment. 5. It releases the tension above the site of obstruction and frequently reestablishes the normal passage of intestinal contents, thus permitting the patient to be operated on in the interval stage if advisable. 6. In the treatment of paralytic ileus this is the only method we know which can uniformly be depended on to relieve the distention of the small bowel, which is not uncommonly fatal. The disadvantages of the method are that: 1. It necessitates careful selection and evaluation of cases. It is not suitable for treatment of strangulated types of obstruction. 2. It requires hard work on the part of the surgeon and his associates. Passage of the tube and attention to details with regard to the patient and the equipment require continued attention. 3. It is not suitable for obstruction of the large bowel, since, despite the fact that the tube frequently traverses the entire intestinal tract, it cannot be depended on to reach the large bowel quickly enough to be of value."

ACUTE HEMOLYTIC STREPTOCOCCUS
INFECTIONS COMPLICATING
ADDISON'S DISEASE

TREATMENT WITH SULFADIAZINE AND ADRENAL
CORTEX EXTRACT; REPORT OF TWO CASES

GEORGE W. THORN, M.D.

AND

ROGER A. LEWIS, M.D.

BALTIMORE

The susceptibility of patients with Addison's disease to acute infections of the upper respiratory tract is well known.¹ Despite the efficacy of adrenal cortex extract² in maintaining patients in good clinical condition, a relatively high incidence of infections of the upper respiratory tract, especially those caused by the hemolytic streptococcus, persists.

During the past year eight severe acute hemolytic streptococcus infections have occurred in a group of 50 patients with classic signs and symptoms of Addison's disease. The clinical course of the infection in all 8 patients was characterized by an abrupt onset with temperature rising to 104-106 F. within the first twelve to twenty-four hours. A striking fall in blood pressure usually occurred within the first twelve to thirty-six hours. Little or no leukocyte response was noted in the 4 patients who were hospitalized. Two of these patients died as a direct result of the streptococcal infection.

Sulfanilamide and sulfathiazole were used in the treatment of the 2 patients who died. It was thought that these drugs might prove efficacious, but unfortunately the toxicity of these compounds for patients with Addison's disease precluded their continued administration. From the clinical course of these patients, however, it seemed apparent that the newer and more potent adrenal cortical hormone preparations in conjunction with intravenously administered dextrose and saline solutions could be depended on to maintain plasma volume, blood pressure and blood dextrose level and thus prevent the early death (twenty-four to forty-eight hours) which so frequently terminated acute adrenal crisis. Thus, if an effective bacteriostatic of relatively low toxicity was available, one might reasonably hope for some success in treating this serious complication with combined glandular and antibacterial agents.

Recently we have had an opportunity to use sulfadiazine³ in conjunction with adrenal cortex extract in the treatment of acute hemolytic streptococcus pharyngitis in 2 patients with Addison's disease (charts 1 and 2). The absence of nausea, vomiting and other toxic manifestations during treatment with sulfadiazine permitted adequate chemotherapy. The clinical response of these 2 patients was so striking in comparison to our previous experience in the treatment of this complication that we are recording in some detail the therapeutic measures which were employed.

Dr. Lewis is John D. Archbold Fellow-in-Medicine.

Dr. W. Barry Wood gave many valuable suggestions.
From the Chemical Division, Medical Clinic, the Johns Hopkins University and Hospital.

This study was aided by a grant from the Committee on Research in Endocrinology, National Research Council.

1. Rowntree, L. G., and Snell, A. M.: *A Clinical Study of Addison's Disease*, Mayo Clinic Monographs, Philadelphia, W. B. Saunders Company, 1931. Greene, C. H.: *Clinical Use of Extract of the Adrenal Gland*, Arch. Int. Med. 59: 759 (May) 1937. Greene, T. A., and Johnston, G. W.: *Electrolyte Balance During Treatment of Addison's Disease*, J. Clin. Endocrinol. 2: 1052 (Nov.) 1940.

2. Thorn, G. W.: *Treatment of Addison's Disease*, Clin. Endocrinol. 1: 76 (Jan.) 1941.

3. The sulfadiazine that was used in these studies was supplied by Dr. Perrin Long.

The purpose of treatment may be summarized as follows:

1. Support of plasma volume and blood pressure:
 - (a) Intravenous infusion of sodium chloride (0.9 per cent solution) and dextrose (5 per cent solution).
 - (b) Aqueous adrenal cortex extract (intravenously and subcutaneously).
 - (c) Synthetic desoxycorticosterone acetate in oil (intramuscularly).
 - (d) Epinephrine in oil, intramuscularly.
2. Prevention of hypoglycemia:
 - (a) Intravenous infusion of dextrose (1a).
 - (b) Frequent feedings of readily available carbohydrate.
 - (c) Treatment with adrenal cortex extract to increase gluconeogenesis (1B) ⁴
3. Antibacterial chemotherapy:
 - (a) Intravenous administration of sodium sulfadiazine.
 - (b) Oral administration of sulfadiazine.

SUGGESTED OUTLINE OF THERAPY

1. Five hundred cc. of 0.9 per cent sodium chloride solution and 1,000 cc. of 5 per cent dextrose solution are given intravenously and repeated every eight hours (at the time of the initial venipuncture, blood is with-

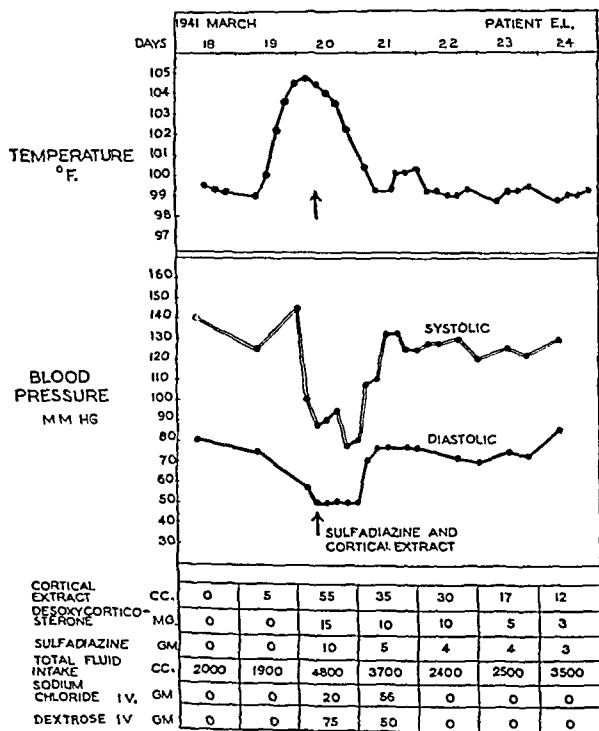


Chart 1—Temperature and blood pressure of first patient. The initial dose of sulfadiazine was 4 Gm. of the sodium salt administered intravenously. The first dose of adrenal cortex extract was also given intravenously.

drawn for hematocrit, blood sugar, serum chloride and bicarbonate determinations).

2. Twenty-five cc. of aqueous adrenal cortex extract is added to the intravenous infusion and in addition 10 cc. of extract is injected subcutaneously. The subcutaneous injection of 5 to 10 cc. of aqueous extract is repeated every two to three hours until the fever subsides.

4. Thorn, G. W.; Koeps, G. F.; Lewis, R. A., and Olsen, Elizabeth F.: Carbohydrate Metabolism in Addison's Disease, *J. Clin. Investigation* **19**: 813 (Nov.) 1940.

3. Twenty mg. of desoxycorticosterone acetate in oil is injected intramuscularly in divided doses during the first twenty-hour hours, and 5 to 15 mg. given once daily thereafter.

4. Sodium sulfadiazine 4 to 5 Gm. is given intravenously. It is extremely important to administer the

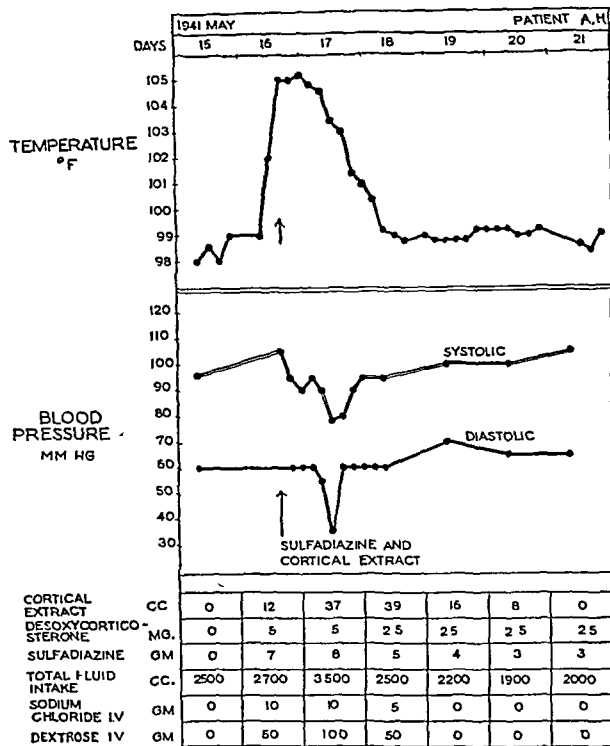


Chart 2—Temperature and blood pressure of second patient. The initial dose of sulfadiazine was 4 Gm. of the sodium salt administered intravenously. The first dose of adrenal cortex extract was also given intravenously.

sodium sulfadiazine intravenously, as every effort should be made to establish an adequate blood level of the drug as rapidly as possible. Following this, 1 Gm. of sulfadiazine is given every four to six hours by mouth and the blood level is maintained at 10 to 20 mg. per hundred cubic centimeters as long as fever persists. If the oral dose is not retained, the blood level is maintained by giving 2 Gm. of sodium sulfadiazine intravenously at eight to twelve hour intervals. Frequent determinations of the blood level of the drug are indicated because of the strong fluctuation in fluid balance which may occur in these patients. It is also desirable to continue sulfadiazine therapy in smaller doses for five to seven days after the temperature has returned to normal (charts 1 and 2).

5. One cc. of epinephrine in oil injected intramuscularly at eight to twelve hour intervals is indicated if the level of systolic blood pressure is below 100 mm. of mercury.

6. Blood pressure determinations are made at intervals of one to two hours, day and night. Small quantities of fruit juice with added lactose, or ginger ale, are given at frequent intervals, if tolerated. Since 1,500 cc. of saline and dextrose solution is given intravenously every eight to twelve hours during the first two days, additional fluid by mouth is not essential. A daily blood specimen is taken for hematocrit, nonprotein nitrogen, blood sugar and sulfadiazine level. Hemodilution, excessive edema or hypertension is a definite indication for temporarily discontinuing injections of

desoxycorticosterone acetate in oil and for reducing the amount of intravenous saline solution. On the other hand, hypotension, if accompanied by hemoconcentration, is a definite indication for increasing the dosage of desoxycorticosterone acetate in oil and the quantity of saline solution administered intravenously. If hypotension and generalized edema occur at the same time, it is wise to discontinue desoxycorticosterone acetate in oil therapy and resort to frequent injections of aqueous adrenal cortex extract (10 cc. every one to two hours). One cc. of epinephrine in oil may be injected intramuscularly and repeated if the systolic blood pressure continues to fall. Our experience with the unfavorable reaction of some patients with Addison's disease to transfusions suggests that this therapeutic procedure be withheld unless other measures fail.

SUMMARY

Acute hemolytic streptococcus infections continue to be one of the most frequent and serious complications which occur in patients with Addison's disease. Adequate sulfadiazine therapy was well tolerated by 2 patients with acute hemolytic streptococcus pharyngitis. The use of this drug in conjunction with adrenal cortical hormone appears to offer the most efficacious form of treatment now available for patients with Addison's disease with this type of infection. An outline of therapy is given, and the urgent need for immediate, constant and continued treatment is indicated.

PROTOCOLS

1. E. L.,⁵ a woman aged 52, single, who had had Addison's disease for over two years, was in the Johns Hopkins Hospital for treatment of arthritis. On May 18, 1941, 5 pellets which had been implanted eleven months before were removed. Two days later the patient contracted a fever which was thought to be due to a recurrent cystitis. She was given a small dose of sulfathiazole but no additional therapy. The next morning her temperature had risen to 105 F. and her throat had become inflamed and edematous. Her blood pressure fell from 140 systolic and 80 diastolic to 78 systolic and 50 diastolic mm. of mercury and she became semicomatose. An infusion was started immediately and she was given 1,000 cc. of 5 per cent dextrose and 500 cc. of 0.9 per cent sodium chloride solution. She was also given 4 Gm. of sodium sulfadiazine intravenously and 1 Gm. of sulfadiazine by mouth. During the first twelve hours of treatment she received 55 cc. of aqueous adrenal cortex extract intravenously and subcutaneously, 15 mg. of desoxycorticosterone acetate in oil intramuscularly and 1 cc. of epinephrine in oil intramuscularly. With continued treatment the temperature gradually fell and the blood pressure returned to normal thirty-six hours after therapy had been instituted. Her convalescence was complicated by an attack of erythema nodosum.

The essential laboratory data were as follows:

On March 19, the initial date of infection, the hematocrit reading was 38.5 per cent volume of packed cells, the white blood cells 12,700, blood nonprotein nitrogen 30 mg. and blood dextrose 81 mg. per hundred cubic centimeters, the serum chloride 99 and the serum carbon dioxide combining power 28.5 milliequivalents per liter. A urine culture taken at this time was reported as being sterile; a throat culture revealed 85 per cent beta hemolytic streptococci. On March 20 the blood level of free sulfadiazine was 21 mg. per hundred cubic centimeters. On March 21 the white blood cells were 10,400. March 22 the hematocrit reading was 32.7 per cent volume of packed cells. On March 23 the throat culture showed normal throat flora.

2. A. H., a woman aged 21, married, who had been treated for Addison's disease for one year, was admitted to the hospital for reimplantation of pellets of desoxycorticosterone acetate. On the morning of May 16, 1941 she did not feel well

and complained of a sore throat. At 4 p. m. the same day her temperature was 105 F. At this time the pharynx was inflamed and the tonsils were large and swollen. Treatment was immediately instituted, 4 Gm. of sodium sulfadiazine being given intravenously and 1 Gm. of sulfadiazine every four hours being given orally. At the same time she was given 15 mg. of desoxycorticosterone acetate in oil and frequent subcutaneous injections of adrenal cortex extract in addition to saline and dextrose infusions intravenously. During the first twelve hours of treatment the temperature remained elevated and the swelling and redness of the throat increased. Despite the presence of moderate generalized edema the blood pressure fell from 115 systolic and 75 diastolic to 72 systolic and 48 diastolic mm. of mercury. At this time 1 cc. of epinephrine in oil was given intramuscularly. During the second twelve hours of treatment there was a remarkable improvement in her general condition and during the second twenty-four hours of treatment the temperature fell to 98.6 F. (rectal) and the blood pressure gradually returned to normal.

The essential laboratory data were as follows:

On May 16, the initial date of infection, the white blood cells were 10,200 with polymorphonuclears 64 per cent, lymphocytes 29 per cent, myelocytes 6 per cent and eosinophils 1 per cent. A throat culture showed 75 per cent beta hemolytic streptococci. On May 17 the white blood cells were 8,200 and the blood level of free sulfadiazine was 10 mg. per hundred cubic centimeters. On May 19 the blood level of free sulfadiazine was 9 mg. per hundred cubic centimeters and on May 20 a throat culture revealed only normal throat flora.

DIAGNOSTIC AND PROGNOSTIC VALUE OF THE ELECTROENCEPHALOGRAM

FREDERIC A. GIBBS, M.D.

BOSTON

Twelve years have passed since Berger¹ first described the electrical beat of the brain in man. In these twelve years workers all over the world have studied intensively the anatomic, physiologic and psychic correlates of the electroencephalogram.² More than six hundred articles dealing with this subject have been published and sufficient evidence has been accumulated to indicate the general significance of this new phenomenon and to show that it has practical value for the solution of clinical problems, and also that it has certain definite limitations.

Before proceeding further, I shall define electroencephalography: It is the technic of recording the electrical beat of the brain. As Berger pointed out, this beat is analogous to the beat of the heart as it appears in the electrocardiogram. The brain beat is entirely electrochemical, however; it has no appreciable mechanical component. In the normal waking state the brain does not beat as a single huge unit but as many small, more or less independent units with ill defined boundaries—somewhat like the heart in fibrillation. The voltage ordinarily obtained from the brain is about one hundredth as large as that obtained from the heart, which makes vacuum tube amplification necessary. Another difference between the electroencephalogram

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1. Berger, Hans: Ueber das Elektroencephalogramm des Menschen: I. Mitteilung, Arch. f. Psychiat. 87: 527-570, 1929.

2. It is impossible in this short report to include references to the work of all those who have contributed to our present knowledge of the subject. A complete bibliography and proper distribution of credit will be found in the Atlas of Electroencephalography by F. A. Gibbs and E. L. Gibbs (Cambridge, Mass., Lew A. Cummings Company, 1941).

5. The complete protocol appears in Thorn, Koepf, Lewis and Olsen.⁴

and the electrocardiogram is that the complex wave forms in the electroencephalogram, unlike those in the electrocardiogram, cannot be interpreted as due to the spread of a wave of excitation. In the electroencephalogram, complex waves are the result of superimposed beats from different types of functional units, for the brain is far from a homogenous organ—some units are large and some small, some slow and some fast. Another important difference should be noted: The electroencephalograph does not record activity at any great distance; only activity going on immediately under an electrode shows in the record. If electrodes are connected to the front and back of the head, for example, what is recorded is not the beating of the entire brain but the algebraic sum of the activity under the frontal electrode and under the occipital electrode.

The beating of the brain becomes faster and shallower with stimulation, and particularly with attention. It slows and develops a high amplitude with deep sleep. It becomes faster with increasing age and varies greatly from one person to another. It is about as labile as the facial expression but, like facial expression, tends to remain more or less characteristic for each individual. All this variation in normal subjects, however, makes interpretation difficult.

Diseases of the brain tend to produce definite disturbances in the brain beat, but unless the cortex immediately under the electrodes is disturbed abnormalities will not appear in the record. Thus it is difficult to detect and impossible to localize deep cerebral or cerebellar lesions. It is true, however, that a localized lesion may set off abnormal nerve impulses which produce a focus of disorder in a distant cortical field. On the other hand, if there are no functional connections extreme injury in one part of the brain may not manifest itself at all in another. The response of the brain to injury is in general nonspecific: Injury usually produces abnormally slow waves, and the worse the injury the slower the waves. At times, however, injury produces bursts of abnormally fast waves. The location of a brain tumor, area of trauma or a localized infection may be deduced from the part of the cortex that shows maximal disorder. When a lesion is truly cortical, such localizations are about 90 per cent accurate. As has been said, however, deep cerebral lesions and cerebellar lesions are ordinarily unlocalizable. Instead of the usual type of electrode that is pasted on the surface of the head, a nasal electrode has been recommended for localizing lesions at the base of the brain, but as yet no adequate series has been collected to show how accurate such deep localizations are. Electroencephalography has these advantages over the injection of air and roentgenography. It is absolutely painless and perfectly safe. On the other hand, in the general run of brain tumors it does not give as accurate a localization as the injection of air and roentgenography. Nevertheless, when used by a competent diagnostician, it can save a certain number of patients the necessity of the injection of air, and in some cases in which, despite all other procedures, a satisfactory localization cannot be arrived at, the electroencephalogram will provide crucial evidence leading to a correct localization. The over-all accuracy of the electroencephalographic localization of gross intracranial lesions is about the same as the accuracy of localization from the neurologic examination.

Probably the greatest economic advantage of electroencephalography lies in its usefulness in cases of head injury. Such cases not only form a large fraction of

neurologic practice but they are beset with various legal complications which make the clinician feel acutely the need for an objective record of function of the central nervous system. Such a record is provided by the electroencephalogram. It can show the extent to which function of the central nervous system has been impaired, the imminence of convulsions and whether the patient is improving or getting worse.

In various conditions in which the nature of the disease is known and also the general areas that are involved, it is nevertheless desirable to know the extent and degree of cortical involvement. In Sydenham's chorea, for example, cortical involvement is fairly common, but in any given case the neurologist may wish to know whether this has occurred. So also with epidemic encephalitis and meningitis.

In all the conditions mentioned thus far electroencephalography is used as an auxiliary technic. In the diagnosis and understanding of epilepsy electroencephalography is of primary importance. Epilepsy is associated with extreme and obvious modifications of the cortical beat not only at the time of a seizure but in intervals between seizures. In grand mal attacks the beat becomes too fast, in psychic seizures it is too slow and in petit mal attacks there is a kind of gallop rhythm, a three per second alternation between fast and slow. Unfortunately, about 10 per cent of the supposedly normal population has cerebral dysrhythmias, and these are only slightly or not at all different from the interseizure dysrhythmias of epileptic patients. Thus it is hazardous to make a diagnosis of clinical epilepsy from the electroencephalogram. I believe, however, that these cases of asymptomatic dysrhythmias are in fact cases of asymptomatic epilepsy. Only the severest dysrhythmias in a person are clinically evident and only especially severe cases of cerebral dysrhythmia in the population manifest themselves as clinical epilepsy. When the incidence of convulsions is higher than that in the normal population, for example, in the parents and near relatives of epileptic patients or in the lowest grades of feeble-mindedness, the incidence of dysrhythmias is proportionately higher.

Severe cerebral dysrhythmias are at times encountered in persons with an unusual type of gastric complaint. This finding suggests that the difficulty is cerebral rather than gastric. Cases of uncontrollable rage or negativism at times show exacerbations of cerebral dysrhythmia correlating with the outbursts. Many problem children show abnormalities similar to those encountered in epileptic patients with psychic seizures. The physician can make practical use of these facts if he considers the possibility that almost any type of bizarre behavior may be the result of cerebral dysrhythmias. The behavior in some cases, however, is not so bizarre. Occasional cases of stuttering are due to petit mal, and also cases of inattention or gross carelessness. Extreme belligerence or abusive speech which might be considered normal is at times a manifestation of a psychic seizure.

In the treatment of epilepsy, the electroencephalogram is helpful because it tells the amount and type of disorder that is present. On the amount of disorder depends the chance of successful therapy. On the type of disorder depends whether phenobarbital or sodium diphenyl hydantoinate is likely to be more useful. In all cases, however, the only way to tell which therapy will work best is to try them. The final treatment of epileptic patients is much the same in a clinic with

an electroencephalograph as in one without. The advantage for the former lies chiefly in greater ease and accuracy of diagnosis and classification and a better comprehension of the basic features of this condition.

Thus far little has been said about what electroencephalography cannot do. It cannot at present be used to diagnose manic-depressive psychosis, schizophrenia, feeble-mindedness, migraine or psychoneurosis. It cannot detect loss of brain substance unless the mass of tissue which has been lost is very large, for what is recorded is activity, and when a part of the cortex has died and ceased to function it is hardly missed in the great welter of activity that still remains.

What is the future of electroencephalography? It will be used in an increasing number of clinics and hospitals, as at present it is being used for the diagnosis of cortical dysfunction and the localization of intracranial lesions. But new uses will appear as more quantitative data are obtained. A method devised by A. M. Grass makes it possible to transform the electroencephalogram from a complex mixture of waves into a chart showing the exact amount of energy in each frequency. With such quantitative data, it is easy to consider a statistically significant series of cases, to establish standards of normal and abnormal and to show degrees of correlation. Thus, it will be seen that quantitative electroencephalography is now possible. This development is likely to be of more practical importance for the psychologist and the mental tester than for the physician. Work now in progress, however, indicates that with greater refinement in technic and better standards of normal certain characteristic abnormalities will be found in schizophrenia.

SUMMARY AND CONCLUSIONS

The electroencephalogram is of clinical value in:

Epilepsy for diagnosis, localization, prognosis and regulation of treatment.

Narcolepsy for diagnosis.

Brain tumor for diagnosis and localization.

Subdural hematoma for diagnosis and localization.

Brain trauma for diagnosis, localization and prognosis.

Brain abscess for diagnosis and localization.

Meningitis for prognosis (residuals).

Encephalitis for diagnosis and prognosis.

Sydenham's chorea for prognosis (cortical involvement).

Schilder's disease for diagnosis.

Behavior disorders for diagnosis and prognosis.

The electroencephalogram at present has only negative value in schizophrenia, manic-depressive psychosis, feeble-mindedness, migraine and psychoneurosis.

Interpretation of the electroencephalogram is difficult because of the complexity and variability of the wave forms in a given person, the variation with age and the wide range of patterns within a given age group.

In the future, electroencephalography will be increasingly applied to clinical problems. Accumulated data will make interpretation easier and more accurate. Quantitative analysis will establish standards for different ages and sexes and will probably reveal significant abnormalities in patients with schizophrenia and some other conditions which at present are supposed to be unassociated with abnormalities in the electroencephalogram.

Boston City Hospital.

ABSTRACT OF DISCUSSION

EDWARD J. BLADES, PH.D., Rochester, Minn.: Dr. Gibbs has pointed out the value of electroencephalography from a diagnostic and prognostic point of view. Although the first publication on electroencephalography by Berger dates back only twelve years, the bibliography of more than six hundred articles is indeed indicative of the thought and energy with which the subject is being explored, and it is no exaggeration to say that many thousands of electroencephalograms are at present being studied in an endeavor to evaluate fully the clinical use of electroencephalography. To those interested in becoming better acquainted with the various types of electroencephalograms I recommend the "Atlas of Electro-Encephalography" published about three months ago by Dr. and Mrs. Gibbs. Dr. Gibbs and his group in Boston have been particularly interested in the study of dysrhythmias and cortical dysfunction, whereas at the Mayo Clinic more attention has been paid to the possibilities of the localization of lesions by electroencephalography. In our experience the electroencephalogram has proved to be of definite value in the diagnosis and prognosis of epilepsy and has been applied, for example, in follow-up examination of some patients who have petit mal epilepsy and are on a ketogenic diet. In regard to the detection and localization of deep cerebral and cerebellar lesions, my colleagues and I believe that many lesions of this type can be localized approximately by examining the electroencephalogram for delta activity that appears bilaterally. For instance, tumors of the posterior fossa are usually associated with bilateral delta activity in the occipital, parietal and temporal areas. This, of course, presupposes that a deep seated lesion can cause a disturbance in the cortex, as the electrical activity actually recorded is only from areas approximate to the electrodes. It is our practice to place sixteen electrodes on the head, in the frontal, motor, anteroparietal, postparietal, occipital, cerebellar and temporal areas, on both sides of the head and both ear lobes, to record routinely on four channels from twenty to thirty minutes and to use both bipolar and monopolar leads. These records are proving to be most useful for study and it is only by the examination of complete records that electroencephalography will be able to maintain the pace already set in the first twelve years of its existence.

DR. MICHAEL M. MILLER, Lexington, Ky.: Since it is well known that the prognostic determinations in cases of functional psychoses and neuroses depend a great deal on the extent of deterioration of the intelligence, I should like to ask Dr. Gibbs whether this method has been studied with regard to the question of determining the extent of cerebral deterioration.

DR. FREDERIC A. GIBBS, Boston: I am glad that Dr. Blades pointed out that it is difficult to localize deep lesions by the technic of electroencephalography as ordinarily employed. I have found it impossible to localize deep tumors or cerebellar tumors. This is because with the usual leads only the activity of the cortex is recorded. Various injuries in the basal ganglia, for instance, although associated with very evident clinical disorders, show no abnormalities at all in the electroencephalogram. Dr. Blades told us that workers at the Mayo Clinic are using the finest possible discrimination on records from cases in which there are deep lesions in the effort to see whether something cannot be found in the electroencephalogram which will allow localization of the lesion. They recognize that they will have to use quite different criteria from those which we and they have used in localizing cortical lesions. It is encouraging to hear that they are meeting with success. They cannot as yet tell us what their accuracy with deep lesions will be, but they have told us that in localizing cortical lesions they have an 80 or 90 per cent accuracy. In order to answer Dr. Miller's question I will read a list of the conditions in which the electroencephalogram is of clinical value. It is definitely useful in epilepsy, brain tumor, concussion, brain trauma, subdural hematoma, encephalitis, meningitis and brain abscess; it is of some value in thyroid disease, cerebral arteriosclerosis, narcolepsy, behavior disorders and dementia paralytica. It is at present of no practical value in schizophrenia, manic-depres-

sive psychosis, multiple sclerosis, parkinsonism (when there is no cortical involvement), choreoathetosis, migraine, psychoneurosis and undifferentiated feeble-mindedness, and when I get to undifferentiated feeble-mindedness I get to the point which Dr. Miller brings up. It is extraordinary what severe degrees of dementia can occur with a normal appearing electroencephalogram, and it is incorrect to suppose that for every psychic change there is some electroencephalographic equivalent. Continuous very slow waves may be found in a man who is standing at the top of his class and a normal record in an individual who has never learned to eat and has never spoken. There are some tremendous discrepancies, and we must continue our study in order to find out just what is at the basis of them. For what at present may seem like annoying inconsistencies may, when explained, prove to be the key to a better understanding of central nervous function.

Clinical Notes, Suggestions and New Instruments

ANAPHYLACTIC SHOCK WITH HEMOCONCENTRATION TREATED INTRAVENOUSLY WITH SALINE SOLUTION

HARRY BLOTNER, M.D., BOSTON

The subject of shock, whether it is surgical or medical, is of unusual interest today. Recently I treated a patient in severe anaphylactic shock. The picture resembled so closely that of surgical shock that it appears of interest to present the details of this case. Ordinarily the treatment of anaphylactic shock is not considered in relation to the blood picture, as it is in cases of surgical shock. I believe that the treatment, based on hemoconcentration and decreased blood volume, was effective and that the method used is of practical significance.

It is generally regarded now that an essential feature of shock is a relative decrease in the circulating blood volume compared with the size of the vascular system. Such an inequality may be brought about by a loss of fluid from the circulation or by an increase in the size of the vascular bed. When fluid is lost a concentration of the blood results, which may be noted by an increased count of the red blood corpuscles or by an elevated hematocrit reading. Excellent reviews of this subject have been given recently by Moon,¹ Dunphy,² Stead³ and Janeway.⁴

LITERATURE

There have been reports in the literature showing an increased concentration of the blood and a decreased volume of blood in cases of anaphylactic shock. Dean and Webb⁵ reported an increase in the hemoglobin content and red blood cell count during anaphylactic shock in dogs. Wyman and tum Suden⁶ noted reductions in the plasma volume in rats depending on the severity of the anaphylaxis. In 1 rat, the plasma volume was reduced 63 per cent in sixty-two minutes after injection of serum. Simonds⁷ found hemoconcentration and decreased blood volume during anaphylactic shock and during intoxication with peptone in dogs. Drinker and Went⁸ found a low blood volume

in guinea pigs with severe anaphylactic shock which, however, they believed was due to poor mixing of the injected dye. Eppinger and his associates⁹ found an increased erythrocyte count incident to acute urticaria. Black and Kemp¹⁰ observed an increased specific gravity of the blood during an acute reaction to ragweed pollen in man and during anaphylaxis in guinea pigs, the degree of which paralleled the severity of the reaction in the animals. Meyler¹¹ reported hemoconcentration in 2 cases of extensive serum disease in man. In the first instance a patient with ulcerative colitis was given large quantities of antidysentery serum and an extensive serum rash and a clinical picture of shock developed, during which the red blood cell count rose from 4,500,000 to 6,000,000. It was impossible to determine the blood volume, because when congo red was injected it disappeared from the blood into the urticarial wheals, which became fiery red. This was a good demonstration of increased permeability of vessels. In the second case of ulcerative colitis general urticaria and shock developed fifteen minutes after a transfusion. The red blood cells increased from 3,900,000 to 7,000,000 during the period of shock. Anaphylaxis may be regarded as an example of true shock, and its circulatory phenomena have been ascribed to increased capillary permeability by Manwaring and his associates,¹² Seegal¹³ and Lewis.¹⁴

REPORT OF CASE

A. F., a man aged 22, was seen for the first time on July 24, 1941 in consultation with Dr. J. J. DiSalvo at the Clover Hill Hospital, Lawrence, Mass., because of severe anaphylactic shock. The entire history of the patient is irrelevant except that about three or four years before he had received a dose of tetanus antitoxin. He had had no cardiac irregularity when examined by his physician on previous occasions.

July 24 at 12:10 p. m. the patient was given as a prophylactic 1,500 units of tetanus antitoxin intramuscularly. He stayed at the physician's office for about twenty minutes and had no apparent ill effects. The patient then went about his routine and at 1:30 he felt an itch in the suprapubic region and noticed what looked like a small blotch. Two minutes later a blotch appeared on the forehead, which was followed by a rash on the whole face. He went back to his physician at 1:55. His face, arms and feet became swollen and a rash developed over the body. At 2:15 he received 5 minims (0.3 cc.) of epinephrine subcutaneously. He became unconscious but the urticaria and the swelling diminished. In about five minutes it was necessary to administer ten minims (0.6 cc.) of epinephrine subcutaneously. The patient was cold and clammy and perspired profusely. The pulse was not perceptible. The blood pressure was 30 systolic and 0 diastolic or less. In another few minutes he was given again 10 minims of epinephrine intravenously and he improved very slightly. Shortly thereafter he became worse and 10 minims of epinephrine was injected intravenously on two occasions. In addition, there were administered an ampule of nikethamide by injection and ephedrine sulfate 50 mg. orally. The blood pressure increased to about 80 systolic and 40 diastolic. The patient was not alert. Vision was blurred. He had nausea and pain in the epigastrium and vomited several times. He was sent to the hospital at 5 o'clock by ambulance because of his critical condition. On arrival, he was given 1,000 cc. of 10 per cent dextrose intravenously and later ephedrine sulfate 25 mg. by this route.

Physical examination at 8:30 showed that the patient was critically ill and was gasping for breath. The pulse was rapid and thready, with a rate of about 160 a minute. The blood pressure was 50 systolic and 30 diastolic, with some variations above and below this level. The heart sounds were weak and a rare extrasystole was present. Murmurs were not heard.

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4. Janeway, C. A.: Medical Progress: War Medicine, *New England J. Med.* 223: 371 (Sept. 4) 1941.

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8. Drinker, C. K., and Went, S.: Blood Volume in Guinea-Pig During Anaphylactic Shock, *Am. J. Physiol.* 88: 479 (April) 1929.

The lungs showed no rales. The abdomen was normal. The reflexes were normal. The liver and spleen were not palpable. The arms, hands and feet were noticeably edematous. The arms were about one and one-half times their normal size. There was an urticarial rash over the body. A puncture wound was present on the sole of the left foot. The patient obviously was in severe anaphylactic shock.

Because of the possibility that there might be some similarity between anaphylactic shock and surgical shock and that this might be noted by the concentration of blood, a red blood count was made immediately and this was found to be 6,910,000. The hemoglobin level was 100 per cent + (Tallqvist). Because of this hemoconcentration, physiologic solution of sodium chloride was given intravenously immediately. When 500 cc. had been introduced into the circulation, the patient began to feel better. The blood pressure began to rise to a level of approximately

*Laboratory Data on Patient in Anaphylactic Shock**

Date	Hemoglobin, per Cent	Red Blood Cells	Serum Protein, Gm. per 100 Cc.	Comment
July 24.....	..	....	...	In shock at 2 p. m., 1,000 cc. 10% dextrose intravenously 5:45 to 6:45 p. m.
9:00 p. m.	100+	6.91	...	B. P. 50/30, pulse 100, moribund
9:35 p. m.	..	....	...	2,000 cc. physiologic solution of sodium chloride intravenously from 9:35 to 11:30 p. m.; much improved
11:55 p. m.	..	5.70	...	B. P. 118/70, pulse 108
July 25				
5:30 a. m.	85	5.00	...	Pulse 90-110, B. P. 118/50, temperature 100 F.
11:15 a. m.	80	4.61	...	
July 26.....	..	4.82	...	
July 27.....	..	4.60	...	Pulse 60-84, B. P. 100-130/40-70
July 28.....	..	5.17	5.5	Temperature 99.6, pulse 78, extrasystoles
July 30.....	60	4.49	...	B. P. 130/60
August 1....	80	4.94	6.2	Pulse 69, B. P. 120/55
August 6....	90	5.26	8.3	Pulse 60; out of bed
August 9....	90	4.98	...	
August 15...	85	5.26	7.2	Temperature 98, pulse 62, B. P. 118/65
August 21...	85	5.41	7.4	Home

* Red blood cells recorded in millions; white blood cells ranged from 7,600 to 12,200; other serum percentages were:

	Albumin	Globulin	Nonprotein Nitrogen	Chloride
July 28.....	3.5 Gm.	2.0 Gm.	29 mg.	330 mg.
August 15.....	3.4 Gm.	3.8 Gm.	21 mg.	424 mg.
August 21.....	4.8 Gm.	2.6 Gm.	37 mg.	321 mg.

100 systolic and 70 diastolic and the pulse rate began to drop to 110. One liter of saline solution including 10 cc. of 10 per cent calcium chloride was given intravenously in fifty minutes and frequent examinations of the lungs showed no rales. Subsequently, another liter of saline solution was given intravenously, and during this period also no rales appeared.

The 2 liters of saline solution was administered continuously from 9:35 to 11:30 p. m. During this time epinephrine 1 cc. was given subcutaneously. By 11:30 the pulse dropped to 108, the blood pressure rose to 118 systolic and 70 diastolic and the patient appeared considerably improved. During the night red blood cell counts were made. At 11:55 the red blood cell count had dropped to 5,700,000, at 5:30 a. m. to 5,000,000 and at 11:15 to 4,610,000. During the night frequent blood pressure readings were taken and they showed some variations. The patient's mind was rather blank during the period of acute therapy, although he does remember that he was short of breath, that it was difficult for him to breathe and that he knew he was getting injections.

Theoretically, it would be ideal to give plasma in a state of shock without hemorrhage, because there is a considerable loss of plasma from the circulation. It might have been even more effective than saline solution in this case, since there is evidence for the loss of plasma in anaphylaxis. However, it was not

given in this instance because saline solution could be administered without delay and after saline solution was given plasma was not needed.

On July 25 the patient appeared much improved. The rash had almost disappeared, although he still had some edema of the hands and lips. The pulse was between 90 and 110 and the blood pressure was 118 systolic and 50 diastolic. The lungs were clear. The heart was normal except for rare extrasystoles. The reflexes were normal. The patient's progress in the hospital was satisfactory. He took orally ephedrine sulfate 50 mg. twice a day until August 4. For the first few days he complained of frontal headache and dizziness when raising his head from the pillow. An occasional blotch appeared periodically until shortly before discharge. On and after July 27, the blood pressure varied from 100 to 130 systolic and 50 to 70 diastolic and the pulse from 84 to 60. On July 28, a frequent irregularity of the heart developed consisting of extrasystoles, and two days later he had some dull precordial pain of less than fifteen minutes' duration. Roentgenograms of the chest were negative on August 9. He was discharged from the hospital feeling well on August 16. Subsequently, he has been active and well, although he has continued to have rare extrasystoles.

LABORATORY DATA

The various laboratory data obtained are presented in the accompanying table. It was of interest to find that the patient's blood was concentrated during the stage of shock and then dropped to normal in a few hours after treatment with saline solution intravenously and remained at a normal level during his stay at the hospital. It was interesting, too, that the serum protein which was determined on July 28 was diminished to a level of 5.5 Gm. per hundred cubic centimeters. Subsequent determinations showed the serum protein to rise as the patient progressed and improved until it reached a level of about 7.4 Gm.

Electrocardiograms, 4 leads, were taken on July 30, August 5 and 15 and September 13. On each occasion the heart rate was approximately 60 and lead 4 was normal. On the first date, the tracings showed frequent auricular extrasystoles and notched P waves which were broader than normal, of 0.12 second's duration and 1 mm. high. T₂ was flat. On August 5 and 15, the P waves remained the same but the extrasystoles were rare and T₂ was 2 mm. high. On September 13, the P waves were of normal width and of 0.08 second's duration, although still slightly notched. Rare auricular extrasystoles were present. T₂ was the same as on the previous occasion.

The significance of these electrocardiographic changes are questionable. However, there have been reported certain electrocardiographic irregularities in the heart and also hemorrhages beneath the endocardium and in the auriculoventricular bundle in association with anaphylactic shock in animals. In dogs in dehydration shock Davis¹⁵ found a dry pericardial sac and hemorrhages in the subpericardium in the region of the coronaries and beneath the endocardium of the auricles and ventricles.

Auer and his associates¹⁶ and others¹⁷ observed that electrocardiograms in certain animals during anaphylactic reactions revealed strong and various changes of the heart's activity such as heart block, abnormal relation of P and T waves, disappearance of T and P waves, ectopic beats, large S and negative T waves, broad R and S waves and auricular fibrillation. In addition, Criepl¹⁸ found changes in the T waves like those noted

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in coronary occlusion and suggested the possibility that the disturbance in the cardiac mechanism may be due to myocardial anoxemia. In man deLavergne and his associates¹⁹ noted a transitory Stokes-Adams syndrome with brachycardia eight days after the injection of antistreptococcus serum for erysipelas, at which time serum sickness developed. Also, Harkavy²⁰ observed certain cardiac arrhythmias and angina pectoris in 3 patients when offended by certain allergens. The relation of the changes in the electrocardiograms to the anaphylactic shock in our case is conjectured. Nevertheless, there were abnormally broad P waves and flat T_s shortly after the shock which returned to normal later.

SUMMARY

A man aged 22 had severe anaphylactic shock two hours after an injection of tetanus antitoxin. The patient was gravely ill and laboratory examinations showed hemoconcentration with a red blood count of 6,910,000. On this basis, he was given 2,000 cc. of physiologic solution of sodium chloride intravenously during a period of two hours, which resulted in dramatic improvement with recovery. The red blood cell count dropped to 5,700,000 at the end of this therapy, to 5,000,000 within six hours and to 4,610,000 within twelve hours of administration of saline solution.

It is suggested that physicians give saline solution intravenously to patients in severe anaphylactic shock along with other routine therapy.

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THE VALUE OF SULFATHIAZOLE OINTMENT IN
THE TREATMENT OF PYOGENIC INFECTIONS OF THE SKIN

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Among the pyogenic infections of the skin, impetigo contagiosa is the most superficial and also the most common. A great deal of controversy has existed concerning the etiology of impetigo contagiosa as to whether it was caused by streptococci or by staphylococci. Recently White¹ revived the discussion of Sabouraud's claim that every case of impetigo contagiosa is of streptococcic origin. The history of this controversy is based on the work of Sabouraud,² Dohi,³ Lewandowsky,⁴ Tachau⁵ and Epstein.⁶ It is now established by the work of Engman,⁷ Dohi, Lewandowsky, Jadassohn and his school and the more recent work of Epstein that impetigo may be of either streptococcic or staphylococcic origin.

The remedies recommended for the treatment of impetigo contagiosa are legion. This fact proves that none of them is entirely satisfactory. Ammoniated mercury ointment in 1 to 5 per cent strength has probably been the most widely used remedy. Besides failing frequently in the treatment of staphylococcic impetigo, it often causes dermatitis. Drying lotions

or suspensions such as cinnabar lotion, gentian violet or silver nitrate solution are frequently used. These have the disadvantage of discoloring the skin, and silver nitrate solution often causes pain.

All these medicaments and their combinations had their place in the therapy of pyogenic infections of the skin as long as there were no specific antistreptococcus or antistaphylococcus drugs. But since it has been found that sulfanilamide is highly effective and specific against streptococcic infections and sulfathiazole against streptococcic and staphylococcic infections, there are specific chemicals which should be given first place in the attack against these infections.

The time required to cure impetigo contagiosa with the previous conventional therapy was from twelve to sixteen days, even in the hands of the most expert. Using sulfathiazole, we attempted to reduce the period of treatment.

Preliminary experimental⁸ work showed that the bacteriostatic effect of sulfathiazole was not diminished in the proper ointment bases and was most effective in a water in oil emulsion, when the base was either cholesterolated petrolatum (aquaphor) or cod liver oil ointment. Therefore we used a 5 per cent sulfathiazole in the bases mentioned and also treated a separate group of patients with sulfathiazole by mouth only, without any local applications.

In this study 60 patients with impetigo contagiosa were treated. The ages and sexes were equally distributed among the three types of treatment used in the experiment. The ages of patients varied from 8 months to 14 years. All stages of impetigo lesions were treated. The majority of patients were hospitalized for stricter observation. In a small number of patients ambulatory treatment was instituted. Twenty patients were treated with 5 per cent sulfathiazole in aquaphor. The ointment was applied two or three times a day and on small children was covered with a bandage. The time necessary for complete treatment varied from two and a half to six days (1 case only taking nine days), the average being four and four-tenths days for cure. Twenty patients were treated with 5 per cent sulfathiazole in cod liver oil ointment (cod liver oil 7.5, concentrated cod liver oil 0.12, hydrous wool fat 4 and petrolatum to make 30 parts) with an average of four and eight-tenths days for cure. Twenty patients were treated orally without any local treatment. These patients received 1.5 Gm. (3 tablets) daily under the age of 6 years and 2.5 Gm. (5 tablets) daily if over the age of 6 years. The average time required for cure was nine and one-half days.

COMMENT

From our observations it can readily be seen that the local application of sulfathiazole in ointment form definitely reduced the time necessary to treat impetigo contagiosa. At no time was there any local or general reaction to the applications. Although there were no reactions following the oral administration, the time required for cure was twice as long as with the local application, and the possibility of toxic manifestations was always present. One ounce (30 Gm.) of 5 per cent sulfathiazole ointment (1.5 Gm. of sulfathiazole) was usually sufficient for complete cure of impetigo contagiosa. The oral medication required about 14.25 Gm. of sulfathiazole per patient.

CONCLUSIONS

1. We propose the use of 5 per cent sulfathiazole ointment in a suitable base for the treatment of impetigo contagiosa.
 2. The treatment is more agreeable and cleaner than were former treatments.
 3. The time required is considerably shorter than that with previous treatment.
 4. The treatment is apparently free from dangerous sequelae.
- 505 Medical Arts Building.

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Special Article

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1940

TWENTY-NINTH ANNUAL REPORT

In anticipation of an opportunity to reassemble the number of deaths from typhoid in each of the ninety-three cities which have been included in these reports in previous years, and in order to recalculate the rates in light of the 1940 census figures, each health officer was requested to furnish the number of deaths from typhoid, both among residents and among nonresidents for each of the last eleven years, 1930 to 1940 inclusive. This procedure demonstrated how difficult is the task of obtaining for such summary figures which are altogether comparable with those secured for previous years. Many clerical errors were evident which required much correspondence and, for some cities, the rechecking of local records and original certificates. The practice regarding reallocations has varied both by time and by place, adding to the confusion. It has been our

TABLE 1.—Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population

	1940	1939	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Worcester.	0.0	0.0	0.2*	0.5*	1.0	2.3	3.5	5.0	11.8
Cambridge.	0.0	0.0	0.2*	0.8	2.1	4.3	2.5	4.0	9.8
Fall River.	0.0	0.0	0.2	0.2	2.3	8.5	13.4	13.5	
Lynn.	0.0	0.0	0.2	0.2	1.5	1.6	3.9	7.2	14.1
Waterbury.	0.0	0.0	0.2	0.4	1.2	1.0	8.0	18.8	
Springfield.	0.0	0.0	0.3*	1.1†	0.4	2.0	4.4	17.6	19.9
New Bedford.	0.0	0.0	0.4	1.1	1.5	1.7	6.0	15.0	16.1
Lowell.	0.0	0.0	0.4	1.2	2.6	2.4	5.2	10.2	13.9
Hartford.	0.0	0.0	0.5	1.0†	1.3	2.5	6.0	15.0	19.0
New Haven.	0.0	1.2†	1.0	0.7†	0.6	4.4	6.8	18.2	30.8
Boston.	0.1*	0.4†	0.3†	0.6	1.2	2.2	2.5	9.0	16.0
Providence.	1.2	0.4	0.6	1.1†	1.3	1.8	7.8	8.7	21.5
Bridgeport.	2.0	0.0	0.4	0.3	0.5	2.2	4.8	5.0	10.3
Somerville.	2.0	0.0	0.6	0.4	1.3	1.6	2.8	7.9	12.1

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

expressed intent to include all typhoid deaths, both resident and nonresident, but in spite of this declaration some health officers have entirely omitted non-resident deaths for allocations made within the state. Common denominators for purposes of comparison cannot be obtained in this way. Now that the death rates have been corrected on the basis of the 1940 census, it will probably be advisable in future reviews to build tables on the basis of resident deaths. This could not be done in the early reviews for want of a common reallocation practice. Some health officers reported cases instead of deaths, but such error became immediately apparent. Less evident was the occasional inclusion of the paratyphoids in spite of instructions to the contrary. Many health officers need pay more attention to statistics sent out from their departments, the accuracy and completeness of which are too frequently left to a casual clerk.

The estimated population on July 1 of each year, 1930 to 1939, was employed in determining rates. These

The preceding articles in this series were published in THE JOURNAL May 31, 1913, p. 1702; May 9, 1914, p. 1473; May 17, 1915, p. 1322; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 777; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 860; March 25, 1922, p. 890; March 10, 1923, p. 691; Feb. 2, 1924, p. 389; March 14, 1925, p. 813; March 27, 1926, p. 948; April 9, 1927, p. 1148; May 19, 1928, p. 1624; May 18, 1929, p. 1674; May 17, 1930, p. 1574; May 19, 1931, p. 1576; April 30, 1932, p. 1550; May 13, 1933, p. 1491; May 9, 1934, p. 1677; June 8, 1935, p. 2093; June 6, 1936, p. 1983; June 19, 1937, p. 2118; July 30, 1938, p. 414; May 13, 1939, p. 1941, and May 25, 1940, p. 2103.

estimates were furnished by the Bureau of the Census. For 1940 the provisional census data were used, since the Bureau has not made population estimates for cities as of July 1, 1940.

Paratyphoid has again been excluded. In tables 1 to 8 inclusive (as well as in table 10) a special note has been made of cities in which all deaths occur among nonresidents. As far as possible this practice has been

TABLE 2.—Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population

	1940	1939	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Yonkers.	0.0	0.0	0.3	0.7	0.5	1.7	4.8	5.0	10
Buffalo.	0.0	0.2	0.1	0.6	2.7	3.9	8.1	15.4	22.9
Rochester.	0.0	0.6†	0.3†	0.4	1.7	2.1	2.9	9.6	12.8
Scranton.	0.0	0.7	0.3	1.4	1.8	2.4	3.8	9.3	31.5
Reading.	0.0	0.9	0.5	0.4	1.6	6.0	10.0	31.9	47.0
Newark.	0.0	0.9	0.3	0.4	0.9	2.3	3.3	6.8	11.6
Utica.	0.0	1.0*	0.2*	0.2	1.1	3.0#	...	...	...
Eric.	0.0	1.7†	0.7†	1.2	0.9	2.3	6.9	49.0	40.6
Camden.	0.0	2.5*	1.4†	2.7	4.4	5.9	4.9	4.5	4.9
New York.	0.1	0.2	0.3	0.8	1.3	2.6	3.2	8.0	12.1
Pittsburgh.	0.4	0.4†	0.7	0.9	2.4	3.9	7.7	15.9	63.0
Philadelphia.	0.6	0.6†	0.8	0.9	1.1	2.2	4.9	11.2	47.7
Jersey City.	0.7†	0.0	0.6	0.3	0.9	2.7	4.5	7.2	12.6
Paterson.	0.7	0.7*	0.7†	0.9	1.0	3.3	4.1	9.1	19.7
Albany.	0.8*	0.0	1.2†	1.2	1.8	5.6	8.0	18.6	37.4
Elizabeth.	0.9	0.0	0.5	0.9	1.6	2.4	3.3	8.0	16.6
Syracuse.	1.0*	0.0	0.3*	0.8	0.8	2.3	7.7	12.3	13.6
Trenton.	2.4*	0.0	1.4†	1.1	2.1	8.2	8.6	22.3	2.1

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

applied to all data for the quinquennium 1936-1940. Another symbol has been used to indicate those cities in which more than one third of the reported deaths were stated to have been among nonresidents.

A comparison of deaths reported by the New England health officers shows a consistency in the annual returns made during each of the past five years and the retabulation submitted for this inquiry. There were reported in 1936 eleven deaths, in 1937 twelve, in 1938 twelve, in 1939 six, in 1940 nine, a total of fifty for the quinquennial period. Ten New England cities (Cambridge, Fall River, Hartford, Lowell, Lynn, New Bedford, New Haven, Springfield, Waterbury, Worcester) report no death from typhoid in 1940 (table 1). In 1939 there were eleven such cities. Fall River, Lynn and New Bedford record no death in four years; Cam-

TABLE 3.—Death Rates of Ten Cities in South Atlantic States from Typhoid per Hundred Thousand of Population

	1940	1939	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Wilmington.	0.0	0.0	0.5	1.5	3.1	4.7	25.8#	23.2#	33.0
Charlotte.	0.0	0.0	1.6†	2.5	...	...	...	...	...
Tampa.	0.0	0.0	0.6†	3.4	3.8	19.1	4.9#	...	...
Jacksonville.	0.0	1.8	2.3	1.6	4.4	...	...	...	...
Baltimore.	0.3†	0.6†	0.9†	1.4	3.2	4.0	11.8	23.7	35.1
Washington.	0.6	0.6	1.1	2.2	2.8	5.4	9.5	17.2	26.7
Atlanta.	0.7	2.3	2.1†	7.3	11.1	14.5	14.2	31.4	58.4
Miami.	1.2	1.2	2.4	2.0	3.5	...	...	...	...
Richmond.	2.5	1.6	2.5†	2.1	1.9	5.7	9.7	15.7	21.0
Norfolk.	2.8†	0.0	1.1†	3.3	2.2	2.8	8.9	21.7	42.1

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

bridge and Lowell extend their record to three years. Hartford, Springfield, Waterbury and Worcester report no death in two years. Of eighteen cities among the ninety-three in the United States recording no deaths from typhoid during the past two years, nine, or one half of the total, are in the New England group. Springfield reports no death among residents during the past six years. Worcester none for five years. While it was stated in the review for 1939 that Bridgeport reported

no death in six years, in light of more recent reports from the health officer Bridgeport had no death in five years (1935 to 1939). In 1940 there were three deaths in Bridgeport, all among residents. It is stated that a carrier was the source of infection for one death; the other two were traced to the eating of clams dug from polluted waters close to shore. Boston records one death among nonresidents. Of thirteen deaths during the past five years (1936-1940) only three have been among residents. For the quinquennium 1931-1935 New Haven reports but one death among residents; for the five years 1936-1940 there are six such deaths recorded. While Providence reports but seven deaths (all among residents) for the last five years, three of these deaths occurred in 1940. Likewise, of three deaths during the last quinquennium in Somerville, two are recorded for 1940. The New England cities as a whole (population 2,579,152) have lost first place among the grouped cities (table 13). The group of Middle Atlantic cities has moved from second to first place, the group of Mountain and Pacific cities occupies second place for 1940 and the New England and East North Central

deaths during these five years, only one of which was among residents. New York reports eleven deaths, all among residents. For the 1939 review the health officer reported twenty-two deaths, but in the present survey the 1939 number has been reduced to seventeen, fifteen among residents. It is stated that in the former review the deaths from paratyphoid were inadvertently included. As in other cities in the North, New York

TABLE 5.—*Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population*

	1940	1939	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Louisville.....	0.9†	0.9*	0.9	2.8	3.7	4.9	9.7	19.7	52.7
Chattanooga.....	1.6	0.0	0.9	5.8	8.0	18.6	27.2	35.8#	...
Memphis.....	1.7†	5.9†	4.0†	7.5	9.3	18.9	27.7	42.5	53.3
Knoxville.....	1.8	4.5	3.8	6.0	10.7	20.8	25.3#	...	...
Birmingham.....	3.4†	1.1†	2.5†	4.1	8.0	10.8	31.5	41.3	41.7
Nashville.....	3.6†	3.0†	3.4†	5.7	18.2	17.8	20.7	40.2	61.2

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

TABLE 4.—*Death Rates of Nineteen Cities in East North Central States from Typhoid per Hundred Thousand of Population*

	1940	1939	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
South Bend.....	0.0	0.0	0.0	0.8	...	...	...	...	...
Fort Wayne.....	0.0	0.0	0.0	2.1	4.2	12.0	7.3	...	...
Milwaukee.....	0.0	0.0	0.1	0.2	0.8	1.6	6.5	13.6	27.0
Grand Rapids.....	0.0	0.6	0.5†	0.2	1.0	1.9	9.1	25.5	29.7
Canton.....	0.0	0.9*	0.4†	0.8	1.4	3.3	8.9	...	...
Youngstown.....	0.0	1.2	0.7	1.2	1.1	7.2	19.2	29.5	35.1
Peoria.....	0.0	1.9	1.3†	0.9	0.2	3.7	5.7	16.4	15.7#
Chicago.....	0.1	0.3	0.3	0.4	0.6	1.4	2.4	8.2	15.8
Columbus.....	0.3*	1.0†	1.4†	1.9	2.1	3.5	7.1	15.8	40.0
Detroit.....	0.3	0.5	0.4	0.7	1.3	4.1	8.1	15.4	22.8
Akron.....	0.4*	0.0	0.6†	0.9	1.5	2.4	10.6	21.0	27.7#
Toledo.....	0.4	0.4*	1.0†	1.2	3.0	5.8	10.6	31.4	37.5
Flint.....	0.7	0.0	1.3†	0.8	1.6	4.6	22.7	18.8	46.9
Cleveland.....	0.7	0.6†	0.6	1.1	1.0	2.0	4.0	10.0	15.7
Cincinnati.....	0.7†	1.1†	1.1†	1.4	2.5	3.2	3.4	7.8	30.1
Gary.....	0.9	1.8	1.1	0.8	...	...	...	...	...
Evansville.....	1.0*	1.0*	1.2†	1.8	6.2	5.0	17.5	32.0	35.0
Indianapolis.....	1.0	1.8†	1.2†	1.8	2.7	4.6	10.3	20.5	30.4
Dayton.....	2.8	0.0	1.4	0.8	1.9	3.3	9.3	14.8	22.5

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

cities tie for third place. For the quinquennial average (1936-1940) the New England group continues to hold first place.

The health officers of the Middle Atlantic cities have not proved as consistent in the reporting of typhoid deaths. On the basis of their annual returns for each of the past five years they report a total of two hundred and eighty-eight deaths, while in the present retabulation they record but two hundred and eighty-three deaths for the quinquennium 1936-1940. The first place Middle Atlantic cities (table 2) have a group rate (0.27) which is lower than that of 1939 (0.37) and 1938 (0.44). Nine cities (Buffalo, Camden, Erie, Newark, Reading, Rochester, Scranton, Utica, Yonkers) report no typhoid death in 1940. In three cities (Albany, Syracuse, Trenton) it is stated that all deaths were among nonresidents. While Utica records no death among residents during the past ten years, it is stated that one death occurred among nonresidents in each of the two years 1935 and 1939. The health officer failed to record such nonresident death in the 1939 report. Yonkers is the only city in this group to report no death for two years. Camden records no death among residents for three years, Albany for two. Buffalo reports but four typhoid deaths for the quinquennium 1936-1940, three among residents. Erie also records four

does not have an organized campaign of immunization, although such preventive treatments are advised for residents who visit camps or summer resorts where typhoid may be endemic and in families where a case exists or a carrier is discovered. In the 1939 review Paterson was included with the eight cities reporting no death. The health officer now reports one death for 1939 among nonresidents, for 1940 one death among residents. In 1939 Philadelphia reported twelve deaths, only six of which were among residents. For 1940 there are recorded twelve deaths, all but one among residents. During the last five years there were eighty-two deaths from typhoid in Philadelphia, of which seventy-three are stated to be among residents. Pittsburgh reports three deaths, all among residents. Rochester reports no death from typhoid, notwithstanding a contamination of a portion of the city water supply in December, at which time about twenty thousand inoculations were given by the health bureau. Syracuse records three deaths (all among nonresidents) during the past five years. In the group as a whole (population 13,129,185) there were thirty-six deaths in 1940, compared with forty-eight in the preceding year.

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population*

	1940	1939	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Duluth.....	0.0	0.0	0.2	1.0	1.1	1.7	4.4	19.8	45.5
St. Paul.....	0.0	0.0	0.3	0.7	1.4	3.4	3.1	9.2	12.8
Wichita.....	0.0	0.0	0.4	1.1	1.2	6.3	...	...	...
Des Moines.....	0.0	1.3	1.3	2.5	2.4	2.2	6.4	15.0	23.7
Minneapolis.....	0.4	0.2	0.2	0.8	0.8	1.9	5.0	10.6	32.1
Omaha.....	0.4	0.4	0.6	0.9	1.3	3.3	5.7	14.9	40.7
St. Louis.....	0.4†	0.7†	0.7	1.6	2.1	3.9	6.5	12.1	14.7
Kansas City, Mo..	0.7†	1.0	0.9†	1.6	2.8	5.7	10.6	16.2	35.6
Kansas City, Kan.	1.6	0.0	1.0	1.0	1.7	5.0	9.4	31.1	74.5#

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data.

For the nine cities of the South Atlantic states (table 3) which have been included in previous reviews, the local health officers now report one hundred and eighty-two deaths instead of one hundred and eighty-four for the five years 1936-1940. The rate (0.73) is significantly lower than that of 1939 (0.93). Charlotte has been included in the group for the first time; however, for purposes of adequate comparison the figures for this city have been omitted in calculating rates for the group as a whole. Four of the ten cities (Charlotte, Jackson-

ville, Tampa, Wilmington) record no death in 1940. Charlotte and Wilmington report no death for two years. With seven deaths in 1939, Atlanta reports but two in 1940, both among nonresidents. It is stated that of three deaths in Baltimore two were among nonresidents, and of thirty-nine deaths occurring in this city

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population*

	1940	1939	1936 1940	1931- 1935	1926- 1930	1921- 1925	1916- 1920	1911- 1915	1906- 1910
Tulsa	0 0	1 4	0 4	1 1	8 3	16 2#	.	.	..
Oklahoma City	1 0	3 0	2 6	4 3	7 4#	.	.	.	..
Fort Worth	1 1	0 6*	2 1	4 5	5 9	6 1	16 3#	11 9	27 8
Houston	1 6	1 6†	2 3	3 2	4 8	7 6	14 2	38 1	49 5#
New Orleans	2 4†	7 3†	5 0†	9 6	9 9	11 6	17 5	20 9	35 6
San Antonio	2 7	2 4†	2 9	4 3	4 6	9 3	23 3	29 5	35 9
Dallas	3 0†	1 7*	2 7†	5 1	7 3	11 2	17 2	..	....
El Paso	3 1†	6 2*	4 5	5 2	9 1	10 8	30 7	42 8	.

* All typhoid deaths were stated to be in nonresidents

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data

during the five years 1936-1940 fourteen were thus classified. Charlotte, a newcomer among the cities of 100,000 population, records eight deaths for the quinquennium, five or which were among residents. Of five deaths in Richmond in 1940, four were among residents; of four in Washington, three were thus classified. In the nine cities (exclusive of Charlotte) there occurred twenty deaths in 1940, twenty-five in 1939, forty-eight in 1938.

To the eighteen cities (population 9,386,378) previously included in the East North Central group (table 4) has been added Gary, but again the figures for this city have been omitted in the tables for group comparison. For the eighteen cities the health officers report two hundred and forty-five deaths for the five year period 1936-1940, two more than recorded in the previous annual tabulations. It is now stated that in these eighteen cities there were sixty-nine deaths in 1936, sixty-four in 1937, thirty-four in 1938, forty-five in 1939, thirty-three in 1940. The rate for 1940 (0.35) is lower than that of 1939 (0.48) and equal to the rate for the New England cities. There are seven cities (Canton, Fort Wayne, Grand Rapids, Milwaukee, Peoria, South Bend, Youngstown) which report no

TABLE 8.—*Death Rates of Twelve Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population*

	1940	1939	1936- 1940	1931- 1935	1926- 1930	1921- 1925	1916- 1920	1911- 1915	1906- 1910
Seattle	0 0	0 3	0 2	0 7	2 2	2 6	2 9	5 7	25 2
Portland.....	0 0	0 3	0 3	0 8	2 3	3 5	4 5	10 8	23 2
Sacramento	0 0	0 9*	1 5*	6 3	1 0	1 6	7 9	17 0	10 8
San Diego ..	0 0	1 9	1 4	1 7	2 6	5 1	5 8	12 0	37.5
Denver ..	0 0	1 9	1 4	1 7	2 2	4 4	4 9	17 1	50 3
Spokane	0 0	2 5†	1 2	1 0	2 2	4 0	4 9	13 6	26 3
San Francisco ..	0 3†	0 0	0 4	0 8	2 0	2 8	4 6	10 7	19 0
Los Angeles ..	0 4†	0 3	0 7†	0 8	1 5	3 0	3 6	8 7	21 5
Oakland	0 6*	0 3	0 5†	0 5	1 1	2 1#	.	.	.
Long Beach	0 6	0 6	0 5	0 5	1 9	6 0	9 3	13 2	41 1
Salt Lake City	0 7*	0 0	0 3*	0 7	1 8	3 7	2 9	10 4	19 0
Tacoma ...	0 9	0 9	0 5	0 9	1 8	3 7	2 9	10 4	19 0

* All typhoid deaths were stated to be in nonresidents

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

Incomplete data

death in 1940. Fort Wayne reports no typhoid death in six years, South Bend no death in five years, Milwaukee no death in four years. In three cities (Akron, Columbus, Evansville) it is stated that all deaths were among nonresidents. Of eight deaths in Akron during the past five years, five were among nonresidents; of two in Canton, one was so classified. Chicago reports

only four deaths, all among residents. Of forty-three deaths in Chicago during the period 1936-1940, all but one were among residents. The Chicago figures do not include the deaths of Illinois residents outside Chicago and may not, therefore, be directly comparable with those of other cities. Cincinnati reports three deaths in 1940, two among residents; Cleveland six, five among residents. Of twenty-two deaths in Columbus during the quinquennium 1936-1940, twelve were among nonresidents. Of ten in Dayton, five were among nonresidents. For 1940 Dayton records six deaths, five among residents; Detroit five, all among residents. Seventeen cases of typhoid in Dayton were traced to a carrier who prepared food for a banquet held in April; later 2 other cases were traced to this same carrier. It is stated that of six deaths from typhoid in Evansville during the past five years, five were among nonresidents; of twenty-four in Indianapolis, eleven were among nonresidents; of fourteen in Toledo, six were among nonresidents.

The six cities (table 5) in the East South Central group (population 1,286,747) show a decrease in the death rate (2.09 in 1940; 2.58 in 1939). The health officers now record one hundred and sixty-one deaths for the quinquennium 1936-1940, two less than recorded

TABLE 9.—*Eighteen Cities with No Typhoid Death in 1939 and 1940*

Cambridge ††	New Bedford †
Charlotte	South Bend **
Duluth	Springfield
Fall River †	St. Paul
Fort Wayne *	Waterbury
Hartford	Wichita †
Lowell ††	Wilmington
Lynn †	Worcester
Milwaukee †	Yonkers

* No typhoid death in six years

** No typhoid death in five years.

† No typhoid death in four years

†† No typhoid death in three years

in the previous tabulations. For 1939 two cities (Louisville, Chattanooga) report no death among residents. While in 1940 there were no cities in this group, four (Louisville, Memphis, Birmingham, Nashville) report that more than one half of the deaths occurred among nonresidents (fifteen of twenty-three). Again the death rate in these urban centers is affected unfavorably by the hospitalization of cases brought in from the surrounding rural areas. Of nine deaths in Birmingham, it is stated that seven were in nonresidents. The proportion for 1940 is much higher than for the five year period (thirteen of thirty-four). Chattanooga, reporting no death in 1939, records two among residents in 1940; Knoxville two, one among residents; Louisville three, one among residents; Nashville, six, two among residents, one of whom contracted the infection outside the city limits. Reporting seventeen deaths in 1939, twelve among nonresidents, Memphis records but five deaths in 1940, and it is stated that two of these were among nonresidents. The rate for the six cities in 1940 (2.09) is slightly higher than that for the West South Central group (2.00).

The West North Central group (table 6) (population 2,716,484) shows a decrease in the death rate from 0.52 in 1939 to 0.41 in 1940. For the five years 1936-1940 the health officers record eighty-one deaths, an increase of two over the total reported in the statistics previously submitted for each of the five years. Originally reporting one death in 1938, Des Moines now records three deaths for that year. The rate for

the nine cities (0.41) approximates that (0.35) for the New England and the East North Central groups. Four cities (Des Moines, Duluth, St. Paul, Wichita) record no death in 1940. Wichita reports no death during the past four years, Duluth but one death during the quinquennium 1936-1940. Kansas City, Kan., with no death in either 1938 or 1939, reports two among residents in 1940. It is stated that in Kansas City, Mo., there were three deaths in 1940, two among residents; for the quinquennium, eighteen, eleven among residents. Minneapolis reports two deaths in 1940, both in residents; four for the five years 1936-1940, three among residents. St. Louis records three deaths, two among residents.

The cities in the West South Central group (table 7) (population 2,048,692) report a very significant reduc-

TABLE 10.—Death Rates from Typhoid in 1940

Honor Roll: No Typhoid Deaths (Forty-One Cities)¶

Buffalo	Lowell	South Bend
Cambridge	Lynn	Spokane
Camden	Milwaukee	Springfield
Canton	Newark	St. Paul
Charlotte	New Bedford	Tampa
Denver	New Haven	Tulsa
Des Moines	Peoria	Utica
Duluth	Portland	Waterbury
Erie	Reading	Wichita
Fall River	Rochester	Wilmington
Fort Wayne	Sacramento	Worcester
Grand Rapids	San Diego	Yonkers
Hartford	Seranton	Youngstown
Jacksonville	Seattle	

First Rank: From 0.1 to 1.9 Deaths per Hundred Thousand (Forty-Three Cities)¶

Boston.....0.1*	Long Beach.....0.6	Gary.....0.9
Chicago.....0.1	Philadelphia.....0.6	Tacoma.....0.9
New York.....0.1	Washington.....0.6	Evansville.....1.0*
Columbus.....0.3*	Atlanta.....0.7*	Syracuse.....1.0*
Baltimore.....0.3†	Salt Lake City.....0.7*	Indianapolis.....1.0
San Francisco.....0.3†	Cincinnati.....0.7†	Oklahoma City.....1.0
Detroit.....0.3	Jersey City.....0.7†	Fort Worth.....1.1
Akron.....0.4†	Kansas City, Mo.....0.7†	Miami.....1.2
Los Angeles.....0.4†	Cleveland.....0.7	Providence.....1.2
St. Louis.....0.4†	Flint.....0.7	Chattanooga.....1.6
Minneapolis.....0.4	Pateron.....0.7	Houston.....1.6
Omaha.....0.4	Albany.....0.8*	Kansas City, Kan. 1.6
Pittsburgh.....0.4	Louisville.....0.9†	Memphis.....1.7†
Toledo.....0.4	Elizabeth.....0.9	Knoxville.....1.8
Oakland.....0.6*		

Second Rank: From 2.0 to 4.9 (Twelve Cities)

Bridgeport.....2.0	Richmond.....2.6	Dallas.....3.0†
Somerville.....2.0	San Antonio.....2.7	El Paso.....3.1†
Trenton.....2.4*	Norfolk.....2.8†	Birmingham.....3.4†
New Orleans.....2.4†	Dayton.....2.8	Nashville.....3.6†

* All typhoid deaths were stated to be in nonresidents.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

‡ Thirty-nine without Charlotte and Sacramento.

¶ Forty-two without Gary.

tion in the typhoid rate (3.35 in 1939, 2.00 in 1940). The number of reported deaths dropped from sixty-eight in 1939 to forty-one in 1940. A comparison of deaths reported by the health officers in this group of cities shows a similarity between returns made during each of the five years and the retabulation submitted for this inquiry. There were reported in 1936 seventy-nine deaths, in 1937 forty-nine, in 1938 seventy-four, in 1939 sixty-eight, in 1940 forty-one, a total of three hundred and eleven for the quinquennial period. Tulsa records no death in 1940. In 1939 there was no city without a death, although three (Dallas, El Paso, Fort Worth) reported that all deaths were in nonresidents. It is stated that of nine deaths in Dallas in 1940 six were among nonresidents. Houston records six deaths with no attempt to differentiate between resident and nonresident. Of twelve deaths in New Orleans, seven were among nonresidents. San Antonio reports seven deaths, five among residents.

To the eleven cities (population 4,186,039) previously included in the Mountain and Pacific group (table 8)

has been added Sacramento, but the figures for this city have been omitted in the tables for group comparison. For the eleven cities the health officers report one hundred and twenty-three deaths for the five year

TABLE 11.—Number of Cities with Various Typhoid Death Rates

	No. of Cities	10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1906-1910.....	77	75	2	0	0	0	0
1911-1915.....	79	58	19	2	0	0	0
1916-1920.....	84	22	32	30	0	0	0
1921-1925.....	89	12	17	48	12	0	0
1926-1930.....	92	3	10	30	37	12	0
1931-1935.....	93	0	6	17	28	42	0
1936.....	93	2	6	30	23	22	10
1937.....	93	2	6	23	23	22	12
1938.....	93	1	7	13	29	29	14
1939.....	93	0	7	18	19	33	16
1940.....	93	0	9	11	27	23	23
1934.....	93	0	7	15	18	29	24
1935.....	93	0	3	15	21	36	18
1936.....	93	0	1	13	26	26	27
1937.....	93	0	3	13	14	34	29
1938.....	93	0	3	7	17	32	34
1939.....	93	0	0	12	12	30	39
1940*.....	93	0	0	12	12	30	39

* Charlotte, Gary and Sacramento omitted.

period 1936-1940, six more than recorded in the previous annual tabulations. It is now stated that in these eleven cities there were thirty-four deaths in 1936, thirty-three in 1937, twenty-three in 1938, twenty in 1939, thirteen in 1940. The rate for 1940 (0.30) is lower than that of 1939 (0.48). The group of

TABLE 12.—Total Typhoid Rate for Seventy-Eight Cities, 1910-1940 *

	Population	Typhoid Deaths	Typhoid Death Rate per 100,000
1910.....	22,573,435	4,637	20.54
1911.....	23,211,341	3,950	17.02
1912.....	23,835,399	3,132	13.14
1913.....	24,457,959	3,285	13.43
1914.....	25,091,112	2,781	11.08
1915.....	25,713,346	2,434	9.47
1916.....	26,257,550	2,191	8.34
1917.....	26,865,408	2,016	7.50
1918.....	27,086,696†	1,824†	6.73
1919.....	27,735,083†	1,151†	4.15
1920.....	28,244,878	1,088	3.85
1921.....	28,659,062	1,141	3.95
1922.....	29,478,246	963	3.26
1923.....	30,087,430	950	3.16
1924.....	30,701,614	943	3.07
1925.....	31,315,698	1,079	3.44
1926.....	31,929,782	907	2.84
1927.....	32,543,966	648	1.99
1928.....	33,158,150	628	1.89
1929.....	33,772,334	537	1.59
1930.....	34,410,235	554	1.61
1931.....	34,508,750	503	1.63
1932.....	34,607,505	442	1.28
1933.....	34,708,945	423	1.22
1934.....	34,833,651	412	1.19
1935.....	35,003,325	348	0.99
1936.....	35,166,325	337	0.96
1937.....	35,356,380	289	0.82
1938.....	35,578,011	257	0.72
1939.....	35,767,022	212	0.65
1940.....	35,895,638	172	0.48

Rates for Ninety-Three Cities:

1935.....	37,025,179	355	1.04
1936.....	37,241,414	306	0.98
1937.....	37,459,339	324	0.86
1938.....	37,680,155	298	0.79
1939.....	37,900,351	250	0.63
1940.....	38,060,662	190	0.50

* The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita, Wilmington.

† Data for Fort Worth lacking.

Mountain and Pacific cities occupies second place for 1940. While in 1938 there were five cities with no death, there were but two such cities in 1939. In 1940 five cities (Denver, Portland, San Diego, Seattle, Spokane) among the original eleven record no death, and two additional cities (Oakland, Salt Lake City) report all deaths among nonresidents. Sacramento like-

wise reports no death in 1940. It is stated that in Denver there were twenty-three deaths during the four year period 1936-1939 but no death in 1940. Los Angeles records six deaths, three among residents; forty-nine for the quinquennium 1936-1940, twenty-six among residents. Sacramento records eight deaths for the five years, all among nonresidents. During the past eleven years (1930-1940) there have occurred forty-three deaths in this city, and but three of these were among residents. Patients from the delta region south of the city are brought to Sacramento hospitals for treatment. San Francisco records two deaths, one in a nonresident.

THE HONOR ROLL

The number of cities with no death from typhoid has increased to forty-one. In 1936 there were but eighteen such cities, in 1937 twenty-seven, in 1938 twenty-nine, in 1939 thirty-four. In 1939 there were fourteen cities with no typhoid death for at least two years; in 1940 there were eighteen such cities (table 9). In table 10 the cities are grouped in rank. In 1938 and again in 1939 there were three cities in third rank (rate in excess of 5.0); however, in 1940 no city falls in this rank. Less impressive is the fact that in 1940 there

TABLE 13—Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions

	Population	Typhoid Deaths		Typhoid Death Rates					
		1940	1939	1940	1939	1940	1939	1940	1939
..	2,579,152	9	6	0.35	0.23	0.39	0.70	1.31	
..	13,129,185	36	48	0.27	0.37	0.43	0.80	1.40	
..	2,727,985	20	25	0.73	0.93	1.14	2.70	4.50	
East North Central	9,986,378	33	45	0.35	0.48	0.53	0.75	1.29	
East South Central	1,286,747	27	33	2.09	2.58	2.54	4.61	8.31	
West North Central	2,716,484	11	14	0.41	0.52	0.60	1.24	1.61	
West South Central	2,048,692	41	68	2.00	3.35	3.09	5.36	7.32	
Mountain and Pacific	4,186,639	13	20	0.30	0.48	0.60	0.88	1.80	

† Data for South Bend for 1935-1939 are not available.
† Lacks data for Oklahoma City in 1936

are twelve cities with rates in excess of 2.0, while there were but ten such cities in 1939. It should be emphasized that in Trenton all deaths were among nonresidents, and in six of the remaining cities with rates in excess of 2.0 the records indicate that one third or more of deaths were among nonresidents. Nine cities in the first rank (Boston, Columbus, Akron, Oakland, Atlanta, Salt Lake City, Albany, Evansville, Syracuse) would appear (in addition to Trenton) in the honor roll were they not charged with deaths in nonresidents. The downward trend in the rates is shown in table 11.

For the quinquennium 1936-1940 the cities of the New England States have the lowest rate (0.39), followed in order by the Middle Atlantic and East North Central groups (table 13). The West North Central and Mountain and Pacific groups have the same rate (0.60). The number of deaths from 1935 to 1940 and the corresponding rates (table 12) for the seventy-eight cities and also the ninety-three cities have been corrected in light of the new figures submitted by the health officers and the census data furnished by the Bureau of the Census. For the seventy-eight cities for which data are available since 1910 there occurred one hundred and seventy-two deaths from typhoid in 1940, which is the lowest of record (two hundred and fifty-seven in 1938; two hundred and thirty-two in 1939). The rate for all cities is now just about one half of one point per hundred thousand of population. No outbreaks have been recorded. Preventive measures have been the same as reported for previous years.

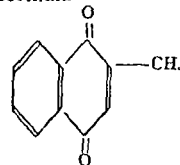
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS FORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary

MENADIONE (pronounced mē-na-di-one).—2-methyl-1,4-naphthoquinone— $C_{11}H_8O_2$ (M. W. 172.17). Menadione has the following structural formula:



It may be prepared by oxidizing 2-methylnaphthalene with chromic acid.

Actions and Uses.—A synthetic naphthoquinone derivative having physiologic properties of vitamin K. See the general article vitamin K, New and Nonofficial Remedies, 1941, p. 546.

Dosage.—From 1 to 2 mg. daily. The dose should not exceed 2 mg. a day and should not be continued at 2 mg. a day for a period exceeding four weeks. When the preparation is given orally, bile salts should be administered with menadione in cases of prothrombin deficiency due to bile obstruction.

Menadione occurs as a lemon yellow, crystalline powder with a faint somewhat musty odor. Under the polarizing microscope it appears as rod shaped, birefringent crystals, exhibiting oblique extinction. Menadione, especially when in solution, is sensitive to light and should be stored in the dark. It is very soluble in chloroform, soluble in acetone, benzene and ether, slightly soluble in petroleum ether and ethyl alcohol, sparingly soluble in methanol and very slightly soluble in water. The melting point of menadione is from 105 to 107°C. Grand together equal portions of menadione and phenacetin (M. P. 134-135°C.) the main portion of the resulting mixture melts sharply at 95°C. (eutectic melting point).

Dissolve a few crystals of menadione in 5 cc. of alcohol, add 2 cc. of an alcohol ammonia solution prepared by mixing equal parts of alcohol and concentrated ammonium hydroxide, shake and add two drops of ethyl cyanoacetate a purple color develops. Add 2 cc. of six normal potassium hydroxide solution the color slowly changes from purple to green to yellow. (This color is also produced by the corresponding 2-methyl-1,4-naphthoquinone by certain other derivatives).

Preparation.—Dissolve a few crystals of menadione in 5 cc. of alcohol and concentrated ammonium hydroxide, shake and add two drops of ethyl cyanoacetate a purple color develops. Add 2 cc. of six normal potassium hydroxide solution the color slowly changes from purple to green to yellow. (This color is also produced by the corresponding 2-methyl-1,4-naphthoquinone by certain other derivatives).

Preparation of solution.—Dissolve a few crystals of menadione in 5 cc. of alcohol and concentrated ammonium hydroxide, shake and add two drops of ethyl cyanoacetate a purple color develops. Add 2 cc. of six normal potassium hydroxide solution the color slowly changes from purple to green to yellow. (This color is also produced by the corresponding 2-methyl-1,4-naphthoquinone by certain other derivatives).

Preparation of solution.—Dissolve a few crystals of menadione in 5 cc. of alcohol and concentrated ammonium hydroxide, shake and add two drops of ethyl cyanoacetate a purple color develops. Add 2 cc. of six normal potassium hydroxide solution the color slowly changes from purple to green to yellow. (This color is also produced by the corresponding 2-methyl-1,4-naphthoquinone by certain other derivatives).

Preparation of solution.—Dissolve a few crystals of menadione in 5 cc. of alcohol and concentrated ammonium hydroxide, shake and add two drops of ethyl cyanoacetate a purple color develops. Add 2 cc. of six normal potassium hydroxide solution the color slowly changes from purple to green to yellow. (This color is also produced by the corresponding 2-methyl-1,4-naphthoquinone by certain other derivatives).

LACTATE RINGER'S SOLUTION.—An aqueous solution containing in 1,000 cc. sodium chloride, NaCl, U. S. P. 6.0 Gm.; potassium chloride, KCl, N. F., 0.30 Gm.; calcium chloride, $CaCl_2 \cdot 2H_2O$, U. S. P., 0.20 Gm., and sodium lactate $NaC_2H_3O_2$, 3.1 Gm. The sodium lactate is prepared by neutralizing lactic acid U. S. P. with a solution of sodium hydroxide U. S. P. Certain modifications of this formula have been used, which include the addition of 0.2 Gm. of magnesium

chloride and/or 0.3 Gm. of sodium bicarbonate per thousand cubic centimeters. Lactate Ringer's solution containing either of these ingredients is labeled accordingly.

Actions and Uses.—Lactate Ringer's Solution has essentially the same use as physiologic solution of sodium chloride, and more particularly Ringer's solution. As is the case with the other salt solutions, it is approximately isotonic with body fluids and may be accompanied with various percentages of dextrose for the purpose of supplying nourishment by vein. Lactate Ringer's Solution is designed primarily for supplying the mineral needs of the body and for the purpose of maintaining or helping to maintain buffer balances.

Dosage.—Same as for Ringer's solution (N. N. R. 1941, p. 389).

Lactate Ringer's solution occurs as a clear, colorless, odorless solution, possessing a slightly saline taste. The specific gravity is from 1.006 to 1.007 at 25 C., and the μ n is not below 5.0 nor above 7.5. Twenty-five cc. of the solution concentrated to 10 cc. conforms to the U. S. P. XI test for heavy metals.

Transfer 1 cc. of lactate Ringer's solution, drop by drop, to 4 cc. of sulfuric acid contained in a test tube and keep cool by agitation in cold water. Place the test tube and contents in the steam bath for two minutes, remove the test tube and cool the contents well; add cautiously 1 cc. of a saturated aqueous guaiacol solution; a rose color develops.

Evaporate a 20 cc. portion of lactate Ringer's solution in a beaker on a steam bath until it is reduced to about 5 cc. in volume. Transfer the evaporated liquid to a suitable test tube and dilute it to 9 cc. Add 1 cc. of freshly prepared sodium cobaltic nitrite solution and mix the contents thoroughly. Treat similarly, omitting the process of evaporation, in an exactly similar test tube, a 4 cc. portion of a standard aqueous solution containing 2.0 Gm. of potassium chloride (previously dried) in 1,000 cc.; the turbidity produced by the lactate Ringer's solution at the end of fifteen minutes is less than that produced by 4 cc. of the standard solution (limit of potassium).

Transfer 5 cc. of lactate Ringer's solution to a Nessler tube; add 0.5 cc. of diluted acetic acid, 40 cc. of water and 5 cc. of ammonium oxalate solution. Dilute the solution at once to 50 cc. and mix the contents thoroughly. Treat similarly portions of a standard solution formed by dissolving 0.154 Gm. of precipitated calcium carbonate (previously dried to constant weight at 200 C.) in 10 cc. of water and 3 cc. of acetic acid, diluting the solution to 250 cc.; the turbidity produced by 5 cc. of the lactate Ringer's solution at the expiration of fifteen minutes is less than that produced by 1.25 cc. and more than that produced by 1 cc. of the standard solution (limit of calcium).

Transfer 25 cc. of lactate Ringer's solution to a drying dish, evaporate to dryness on the steam bath and dry the residue to constant weight at 150 C.; the weight of residue obtained is not less than 0.245 nor more than 0.270 Gm. Evaporate a 25 cc. portion of lactate Ringer's solution to dryness, treat the residue cautiously with an excess of sulfuric acid and ignite the residue to constant weight at 750 C.; the weight of ash obtained is not less than 0.245 Gm. nor more than 0.270 Gm.

Transfer 10 cc. of lactate Ringer's solution to a 400 cc. beaker, add 50 cc. of water and 4 cc. of diluted nitric acid, dilute the solution to 200 cc., add 15 cc. of silver nitrate solution; heat the mixture to boiling and allow to cool and stand until the precipitate is granular. Filter the precipitate on a prepared Gooch crucible; wash the precipitate well with hot water; dry it to constant weight at 140-150 C.; the chloride calculated from the silver chloride weighed is not less than 0.378 Gm. nor more than 0.405 Gm. per hundred cubic centimeters of lactate Ringer's solution.

Transfer 25 cc. of a potassium dichromate solution (7.6237 Gm. of $K_2Cr_2O_7$ per liter) to a 500 cc. Erlenmeyer flask, add 20 cc. of lactate Ringer's solution and 60 cc. of an aqueous solution of sulfuric acid (40% H_2SO_4). Place the flask and contents in a water bath at 70 C.; stopper the flask when the solution attains the temperature of water bath, and keep the flask and contents in the water bath for one hour. Cool the solution, add 200 cc. of water and 8 cc. of potassium iodide solution (10% KI), stopper the flask and mix the contents well, allow the solution to stand for ten minutes in a dark place, and titrate the liberated iodine with tenth normal sodium thiosulfate, using starch test solution as indicator. Make a blank test at the same time with the same quantities of reagents and correct the assay accordingly. Each cubic centimeter of dichromate solution corresponds to 0.003501 Gm. of $CH_3CHOHCOOH$. The amount of dichromate solution consumed corresponds to not less than 0.233 Gm. nor more than 0.265 Gm. of lactic acid ($CH_3CHOHCOOH$), and to not less than 0.290 Gm. nor more than 0.330 Gm. of sodium lactate ($CH_3CHOHCOONa$) per hundred cubic centimeters of lactate Ringer's solution.

Lactate Ringer's Solution in Vacoliter Container. Each hundred cubic centimeters contains sodium lactate ($NaC_2H_3O_2$) 0.31 Gm., sodium chloride U. S. P. 0.6 Gm., potassium chloride N. F. 0.03 Gm. and calcium chloride U. S. P. 0.02 Gm. Marketed in bottles (Vacoliter containers) of 500 cc. and 1,000 cc.

Prepared by Baxter Laboratories, Inc., Glenview, Ill., and Don Baxter, Inc., Glendale, Calif.

PURIFIED SOLUTION OF LIVER-10 U. S. P. UNITS PER CC.-MERRELL.—A sterile aqueous, clear, dark brown solution containing all of the fraction G of the liver extract (Cohn), preserved with 0.5 per cent of phenol. The daily parenteral administration of 0.1 cc. has been found to produce the standard reticulocyte response defined as 1 U. S. P. unit (injectable) when assayed in cases of pernicious anemia as required by the Council.

Actions and Uses.—Purified Solution of Liver-Merrell is recommended for intramuscular use in the treatment of pernicious anemia. See the general article Liver and Stomach Preparations (New and Nonofficial Remedies, 1941, p. 328).

Dosage.—For the average case in relapse, 10 U. S. P. injectable units (1 cc.) may be injected as the initial dose. Subsequent doses from 5 to 10 U. S. P. injectable units (0.5 to 1.0 cc.) may be given weekly until the blood picture has

returned to normal. The maintenance dose should be not less than 1 U. S. P. injectable unit (0.1 cc.) daily and should be adjusted to the needs of the individual patient depending on the degree of complications. It may be administered at weekly or longer intervals in equivalent cumulative doses (15 U. S. P. injectable units twice a month).

Distributed by Wm. S. Merrell Co., Cincinnati
Viats Purified Solution of Liver-Merrell (10 U. S. P. injectable units per cc.) 5 cc.

Purified Solution of Liver Merrell, 10 units per cubic centimeter, is prepared as follows: Fresh edible liver is extracted with water at 170 F. for thirty minutes and filtered. The filtrate is concentrated in vacuo and extracted with 70 per cent alcohol; the alcoholic extracts are concentrated in vacuo and precipitated with ammonium sulfate. The precipitate is further purified by alcoholic fractionation, the alcohol removed and the extract made up to volume so that each cubic centimeter contains the extract from 100 Gm. of fresh liver. Five tenths per cent phenol is used as a preservative.

PURIFIED SOLUTION OF LIVER-5 U. S. P. UNITS PER CC.-MERRELL.—A sterile aqueous, clear, dark brown solution containing all of the fraction G of the liver extract (Cohn), preserved with 0.5 per cent of phenol. The daily parenteral administration of 0.2 cc. has been found to produce the standard reticulocyte response defined as 1 U. S. P. unit (injectable) when assayed in cases of pernicious anemia as required by the Council.

Actions and Uses.—Purified Solution of Liver-Merrell is recommended for intramuscular use in the treatment of pernicious anemia. See the general article Liver and Stomach Preparations (New and Nonofficial Remedies, 1941, p. 328).

Dosage.—For the average case in relapse, 10 U. S. P. injectable units (2 cc.) may be injected as the initial dose. Subsequent doses from 5 to 10 U. S. P. injectable units (1 to 2 cc.) may be given weekly until the blood picture has returned to normal. The maintenance dose should be not less than 1 U. S. P. injectable unit (0.2 cc.) daily and should be adjusted to the needs of the individual patient depending on the degree of complications. It may be administered at weekly or longer intervals in equivalent cumulative doses (15 U. S. P. injectable units twice a month).

Distributed by Wm. S. Merrell Co., Cincinnati
Viats Purified Solution of Liver Merrell (5 U. S. P. injectable units per cc.) 10 cc.

Purified Solution of Liver Merrell, 5 units per cubic centimeter, is prepared as follows: Fresh edible liver is extracted with water at 170 F. for thirty minutes and filtered. The filtrate is concentrated in vacuo and extracted with 70 per cent alcohol; the alcoholic extracts are concentrated in vacuo and precipitated with ammonium sulfate. The precipitate is further purified by alcoholic fractionation, the alcohol removed and the extract made up to volume so that each cubic centimeter contains the extract from 50 Gm. of fresh liver. Five tenths per cent phenol is used as a preservative.

DEXTROSE (See New and Nonofficial Remedies, 1941, p. 179).

Baxter Laboratories, Inc., Glenview, Ill., and Don Baxter, Inc., Glendale, Calif. (American Hospital Supply Corporation, Chicago, eastern distributor).

Dextrose 5% W/V in Ringer's Solution in Vacoliter Container: Each hundred cubic centimeters contains dextrose U. S. P. 5 Gm., sodium chloride U. S. P. 0.7 Gm., potassium chloride N. F. 0.03 Gm. and calcium chloride U. S. P. 0.025 Gm. Supplied in bottles (Vacoliter containers) of 500 cc. and 1,000 cc.

Dextrose 10% W/V in Ringer's Solution in Vacoliter Container: Each hundred cubic centimeters contains dextrose U. S. P. 10 Gm., sodium chloride U. S. P. 0.7 Gm., potassium chloride N. F. 0.03 Gm. and calcium chloride U. S. P. 0.025 Gm. Supplied in bottles (Vacoliter containers) of 500 cc. and 1,000 cc.

Baxter Laboratories, Inc., Glenview, Ill. (American Hospital Supply Corporation, Chicago, eastern distributor).

Dextrose 5% W/V in Lactate Ringer's Solution in Vacoliter Container: Each hundred cubic centimeters contains dextrose U. S. P. 5 Gm., sodium lactate ($NaC_2H_3O_2$) 0.31 Gm., sodium chloride U. S. P. 0.6 Gm., potassium chloride N. F. 0.03 Gm. and calcium chloride U. S. P. 0.02 Gm. Marketed in bottles (Vacoliter containers) of 500 cc. and 1,000 cc.

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SOLUTION OF EPINEPHRINE HYDROCHLORIDE-U. S. P. (See New and Nonofficial Remedies, 1941, p. 254).

SOLUTION EPINEPHRINE HYDROCHLORIDE 1:1,000-ENDO.—A brand of solution epinephrine hydrochloride-U. S. P. containing chlorobutanol 0.5 per cent and sodium bisulfate not more than 0.1 per cent, as preservative, in physiologic solution of sodium chloride.

Prepared by Endo Products Inc., Richmond Hill, N. Y.
Solution Epinephrine Hydrochloride, 1:1,000 Endo, 30 cc. vial: Marketed in vaccine stoppered vials for parenteral administration and in cork stoppered vials for topical administration.

Solution Epinephrine Hydrochloride, 1:1,000 Endo, 1 cc. amp. I.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 17, 1942

PROVISION OF MEDICAL OFFICERS FOR MILITARY SERVICES

The questionnaires published in recent issues of *The Journal* elicited many thousands of replies. The requirements of military necessity do not permit stating the exact numbers of names which have been furnished to the Surgeon General at this time or the number who will be requested to come immediately into the service. Appreciation is tendered particularly to the secretaries of state medical societies and to the editors of state medical journals, who gave complete cooperation in circularization of the appeal to the medical profession.

Under *Medical Preparedness* in this issue of *The Journal* appears a statement from the Procurement and Assignment Service regarding the present status of needs of the armed services and other federal agencies, and regarding also actions recently taken by the Board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians in relation to some questions that have been raised. Every physician in the United States is likely to find before the war is over that special need for his services in some capacity has arisen. The number of physicians to be called into the armed services clearly is sufficiently great to dislocate much of the present status of medical practice. One needs only to point out that the expansion of the Army by another million men would require at least seven thousand additional physicians. An army of four million men would necessitate a total of about thirty-two thousand physicians taken from civilian practice. Moreover, the call is primarily for men under 36 years of age and at most under 45 years of age. On January 15 every medical reserve officer in a governmental department or agency and physically fit was notified that he would be considered available for active duty.

The whole purpose of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians

is to provide for the needs of the armed forces with the minimum amount of dislocation of medical service to civilian needs, including public health agencies, industrial plants and medical education. Another primary purpose is to place, as far as possible, men with special qualifications in duties for which they are particularly fitted. These purposes can be accomplished with the complete cooperation of the medical profession. Should the war be prolonged, however, from two to three years the majority of physicians under 45 years of age who are physically fit will be engaged in the military services. Those who are not physically fit to meet the standards of the Army and the Navy will unquestionably be called on for additional services beyond the practices in which they are now engaged. The needs of civilian defense, industry and public health must be met. The Procurement and Assignment Service plans to give to every physician who enrolls with that service for assignment a certificate and a numbered button to indicate that he has made himself available to the nation in this time of emergency. The medical profession can be depended on to do its utmost. Let us not fail!

SPEEDING PRODUCTION OF PHYSICIANS

Already several medical schools have announced the readjustment of their curriculums so that the sessions will be practically continuous, in order to speed production of physicians and possibly also to increase the total number of physicians graduating each year. For more than twenty years the medical schools of this country have accepted each year slightly over six thousand students. Each year a certain percentage of these students have been dropped from the schools because of poor scholarship or for other reasons; the total number of medical graduates has been approximately five thousand three hundred annually. More than twelve thousand graduates of colleges and some with just two or three years of college education apply each year for entrance into the medical schools. Selections are made with the greatest of care. Since a considerable percentage of those selected are still found to be unable to complete the course because of poor scholarship, many educators have been convinced that six thousand students represent all of the really well qualified candidates for the medical profession that become available. Thus the proposal to increase greatly the number of young men admitted to medical school or to modify the curriculum has caused great concern to leaders in medical education and medical practice. For more than thirty years the struggle to develop a high standard of medical education and to maintain that standard has been a difficult but a successful one. Without a doubt the standards of medical education in the United States are superior to those anywhere

else in the world. The quality of medical service available to the public of the United States is as good as can be found anywhere else in the world. No doubt, distribution of practice may be improved—but that is another question!

The Council on Medical Education and Hospitals of the American Medical Association is, of course, anxious to do everything that can be done to provide a sufficient number of well qualified physicians for the armed forces and for the civilian needs. Nevertheless, familiarity with the physical assets and faculties of the medical schools of the United States causes the Council to have some doubts as to whether every medical school in the country is capable of undertaking an increase in the number of students admitted and of embarking on a continuous session of study and yet maintaining the standards of medical education that the Council has set forth as a minimum. These considerations must not be overlooked. Perhaps the impulsive action taken by the Committee on Medical Preparedness of the Association of American Medical Colleges, presumably as a defense measure, was somewhat too sudden. Perhaps the Health and Medical Committee should have given consideration to this matter. Indeed, there does not yet appear to have been issued from the Health and Medical Committee or any other official agency any statement to the effect that it has given approval.

As one leading educator said, "I feel that those responsible have not thought the proposal through." Here are some of the difficulties that do not yet seem to have been solved:

1. If the young men entering medical schools in June 1942 complete the course in thirty-six consecutive months they will be graduated in June 1945 instead of June 1946. However, they will still require a year of internship, thus making them unavailable for military service until the end of June 1946. As an emergency measure the immediate gain is slight.

2. Many students have been accustomed to utilize the summer vacations to earn funds to finance their medical course. If summer vacations are to be eliminated, these students either will have to be financed from some other source or discontinue their medical education.

3. Many medical students enrolled in the Reserve Officers Training Corps are under obligation to serve a period of training in the field. This must be discontinued if the medical curriculum is to occupy thirty-six consecutive months.

4. If some students follow the thirty-six consecutive month concept and others try to continue the original plan of four years of nine months each, the physical facilities and the technical and teaching staffs will have to be greatly increased or devote far more time than is now given.

5. Unless colleges, universities and hospitals have their curriculums suitably integrated with the curriculums of the medical schools, the students will lose from three to six months spent waiting for entrance into medical courses or to internships in hospitals somewhere along the line.

These are a few of the problems that have been raised and for which solutions do not yet appear to be fully available. Most important, however, is the question of maintaining accepted medical standards. If more students are admitted and a larger percentage fails, little useful purpose will have been achieved. If examinations are abolished, if pressure on a faculty makes it pass unqualified men, if standards of study required for graduation are lowered so that a larger number of students each year receive the medical degree, the ultimate effect will be serious both on the army medical services and on service to the people. Such lowering of professional standards cannot be in the best interests of the nation.

Current Comment

PHYSICAL OR PSYCHIC ALLERGY

A woman aged 31 developed giant hives over her legs after swimming. When she washed with cold water, scattered hives would form. Previously she had not had asthma, hay fever or eczema. Intracutaneous tests with a routine group of inhalants and foods were negative. Dermographism was absent. However, when tested with a standard cold stimulus (cracked ice in a test tube) the patient developed well formed wheals without pseudopods after one minute's application. This sudden change in the patient's reactivity to cold coincided, according to Abramson,¹ with a recent mental conflict. The patient was depressed by the news of war fatalities involving intimate friends. The day previous to the occurrence of hives, while swimming, she had felt that she wanted to drown. On one occasion, despite a severe reaction after swimming, there were no symptoms suggestive of a histamine-like reaction. Abramson points out that the absence of pseudopods and the formation of giant hives without constitutional symptoms suggests that the phenomenon cannot be accounted for by the liberation of a histamine-like substance. The main feature of the case was the suddenness of the onset immediately after a relatively short period of mental conflict which endangered the patient's life. With the change in the patient's point of view the whealing response to cold has disappeared. The case represents a spontaneous recovery from a whealing response to cold without the use of histamine or any other desensitizing agent. While the report concerns but a single instance, so that conclusions can hardly be warranted, the record is suggestive.

1. Abramson, H. A.: Origin of a Whealing Response to Cold. *Psychosomatic Medicine*, October 1941.

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ROENTGEN THERAPY OF GAS BACILLUS INFECTION

Cantril¹ has recently deplored the lack of appreciation by physicians of the value of treatment of gas bacillus infection with the roentgen ray. Five cases are reported as successfully treated. "Débridement or other surgical procedures in the acute phase of an already established gas bacillus infection," he writes, "is not indicated when roentgen therapy is available. Any manipulation or operative procedure is best done after the acute gas infection has subsided or at least until adequate trial of roentgen therapy has been given. The technic of roentgen irradiation requires the use of large fields and the irradiation of far more of the body than the locally involved area. From 500 to 100 roentgens per field should be given two to three times daily for a period of three to five days." Four of his patients received adequate amounts of gas bacillus antitoxin; 1 patient received, in addition, multiple blood transfusions, and another patient had a limb amputated. In view of the generally accepted efficacy of the serum in the treatment of gas bacillus infection, it would be difficult to say whether the recovery of 4 patients was due to roentgen therapy or to serum therapy. The same criticism may be applied to the report of Faust,² who treated 5 patients with serum and the roentgen ray. The most enthusiastic proponent of roentgen therapy in gas bacillus infection is Kelly,³ who reported 143 cases, some treated personally and others based on data from questionnaires returned by a hundred physicians scattered throughout the United States and Canada. Kelly and his co-workers were enthusiastic over the results of roentgen treatment of gas gangrene, saying that the results far surpassed those obtained with serums, débridement and amputations. They were inclined to regard roentgen therapy in gas gangrene as a specific and stated that, if it is employed during the first twenty-four hours, recovery will occur in all cases. Nevertheless Cubbins, Callahan and Scuderi⁴ state "We are positive that the x-ray treatment of gas bacillus infection has little, if any, value. In 8 cases of proved gas infection that were treated with x-ray without surgery or antitoxin, there were 8 deaths. X-ray will destroy tissues and no amount of it will serve to disturb the growth and reproduction of gas bacillus when it is applied to cultures. We can see no reason for even considering x-ray in the treatment of these cases." Attempts to reproduce the clinical effects in animal experiments thus far have failed. Caldwell⁵ induced gas bacillus infection in guinea pigs and treated them one to three hours after inoculation with from 100 to

200 roentgens. Of the 10 animals thus treated, 7 died after eight to eighteen hours. Apparently the determination of the specificity or efficacy of roentgen therapy in gas bacillus infection must await more rigidly controlled clinical investigations in an adequate number of cases.

FINLAY INSTITUTE OF THE AMERICAS

On January 6 in the Medical School of the University of Havana an agreement was reached for the establishment of an organization known as the Finlay Institute of the Americas to foster research and education in the field of tropical disease and to provide for an increased interchange of medical students and teachers among scientific medical institutions in all the American nations. Mr. Basil O'Connor, at present president of the National Foundation for Infantile Paralysis, accepted the presidency of the executive council. Dr. James E. Paullin, president-elect of the American College of Surgeons, was appointed chairman of the Scientific Advisory Committee for the United States. Other members appointed to the executive council included Drs. Thomas Mackie, president of the American Society of Tropical Disease; Dr. Morris Fishbein, editor of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*; Dr. Edgar Mayer, associate professor of medicine in Cornell University and also in the University of Havana; Dr. Enrique Saladrigas, director of the Finlay Institute of the University of Havana; Dr. Rafael Menocal, professor of surgery in the University of Havana, and Dr. Felix Hurtado, assistant minister of public health of Cuba. Executive offices will be established both in Havana and in New York. The Cuban government agreed to provide \$20,000 annually for maintenance of the organization. Substantial contributions were made by several American industrialists and philanthropists. In the course of the negotiations for the establishment of the Finlay Institute of the Americas Mr. O'Connor presented to President Batista of Cuba and to the minister of public health, Dr. Marruz, messages from President Roosevelt and Vice President Henry Wallace, indicating their approval of the project to foster more intense cooperation between scientific institutions of the Latin American countries. Mr. Donald Nelson, who accompanied the party to Cuba, also conferred with President Batista. The University of Havana and the medical school of the university, during the course of the negotiations, provided receptions by their faculties, and addresses were made by the American visitors and also by leading Cuban officials. Representatives of the Cuban Federation of Medicine also presented to the American delegation an offer of complete cooperation in the campaign for medical service in the war. The order of Carlos Finlay was conferred on the American visitors by President Batista. A constitution and by-laws are being prepared for the conduct of the new institute, which should serve a most useful purpose in fostering scientific interchange and good will among the medical professions of all the Latin American countries.

1. Cantril, S. T.: Roentgen Therapy of Gas Bacillus Infection in Radiation Therapy, Staff J. Swedish Hosp. Seattle (supp.), May 1941.

2. Faust, J. J.: Report on X-Ray Treatments in Gas Gangrene Cases, *Radiology* 22: 105 (Jan.) 1934.

3. Kelly, J. F.; Dowell, A.; Russum, B. C., and Colein, F. E.: The Practical and Experimental Aspects of Roentgen Treatment of Bacillus Welchii (Gas Gangrene) and Other Gas-Forming Infections, *Radiology* 31: 608 (Nov.) 1938.

4. Cubbins, W. R.; Callahan, J. J., and Scuderi, C. S.: Compound Fractures of the Elbow Joint in Adults, *Am. J. Surg.* 42: 627 (Dec.) 1935.

5. Caldwell, G. A.: Treatment of Gas Gangrene Experimentally Produced, *J. Bone & Joint Surg.* 23: 81 (Jan.) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

PROVISION OF MEDICAL OFFICERS FOR MILITARY SERVICES

At the time of the Pearl Harbor incident, Dec. 7, 1941, the Army was short approximately fifteen hundred physicians to bring all existing installations up to war strength. Requisition was made on the Procurement and Assignment Service immediately to secure such physicians under the age of 36. The number of physicians in the service was adequate to meet all professional demands in the care of patients but was not sufficient to provide physicians for all organizations on a war strength basis. Therefore the Procurement and Assignment Service on December 18 authorized the publication of application blanks for enrolment with a view to meeting the immediate needs of the Army. These blanks have been circulated by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and by many state organizations. Some confusion has arisen in that many physicians interpreted the enrolment blank as another call for every physician in the United States to register. Actually, only those ready to volunteer for immediate service were wanted and only the applications of those capable of meeting specified qualifications are being forwarded.

The continued registration of all MEN UNDER 36 WHO ARE IMMEDIATELY AVAILABLE for military duty in the Army or the Navy will suffice to meet the immediate needs of the military services, at least until completion of the roster system now being established in the office of the Procurement and Assignment Service.

Within sixty days the Procurement and Assignment Service expects to publish the physical requirements for service with every military, governmental, industrial and civil agency utilizing the services of physicians, dentists and veterinarians. Each physician, dentist or veterinarian will be asked to make a self analysis of his physical condition, so that he may himself determine with which of the agencies he is physically qualified to serve. Shortly thereafter the Procurement and Assignment Service expects to mail a new questionnaire and enrolment form. Each professionally qualified person will be asked to state, first, that he will volunteer his services in the interest of the national emergency; second, to state his first, second, third and

fourth choice of the agencies which he will be willing to serve for the duration of the war. A list will be furnished of every military, governmental, industrial and civil agency requiring the services of physicians, dentists or veterinarians.

On self analysis of his physical condition, each man will be thus able to determine whether his physical fitness qualifies him for duty with the requisitioning agencies. On receipt of the enrolment form the Procurement and Assignment Service will issue a certificate of enrolment and a numbered button which will certify that the recipient has offered his services in the interests of the national defense. Thus, those who remain at home in an essential capacity will derive the satisfaction of knowing that they have offered their utmost to the national emergency and that this offer has been formally recognized by the Procurement and Assignment Service.

SAM F. SEELEY, Executive Officer

MORRIS FISHBEIN, Chairman Committee on Information.

Procurement and Assignment Service.

PHYSICIANS NEEDED FOR RED CROSS BLOOD PROCUREMENT PROGRAM

The expansion of the blood procurement program under the auspices of the American Red Cross will require the services of physicians in a full-time capacity. In the near future there will be published in this section a statement as to the number of physicians required, the age group, the professional qualifications and a list of those to whom they will be asked to make direct application. The physicians wanted for this service will be preferably those over 45 years of age or, if under 45 years of age, not physically fit for the armed services.

OFFICE OF CIVILIAN DEFENSE REQUISITION FOR DEFENSE AREA DIRECTORS FILLED

The requisition which was published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for Dec. 13, 1941 for two men between the ages of 45 and 60 for duty as reserve officers of the United States Public Health Service as defense area directors for the Office of Civilian Defense has been filled. Several hundred applications were received in the office of the Procurement and Assignment Service and were forwarded to the Office of Civilian Defense.

CANCEL DEFERMENTS OF RESERVE OFFICERS WHO ARE FEDERAL EMPLOYEES

The Secretary of War issued the following instructions, January 5:

1. In September 1940 the War Department promulgated a policy permitting Reserve officers who were employed in key civilian positions in the various governmental departments and agencies to be granted unlimited deferments from military duty by being transferred to the War Department Reserve Pool. Because of the present state of war, these deferments will be canceled, effective Jan. 15, 1942, and all affected Reserve officers will be considered available for active duty after notice of relief from the War Department Reserve Pool by this office.

2. Requests for limited deferments should be submitted in triplicate, addressed to the Adjutant General, Washington, D. C., and signed by the responsible head of the department or agency making the request. Such requests will receive favorable con-

sideration, to the extent that military necessity permits, in exceptional cases only. No general or permanent deferments will be authorized. Requests for deferment submitted after active duty orders have been issued cannot be considered.

3. The following information should be furnished with each request for deferment: (a) Name of the officer in full (initials should not be used). (b) Rank and branch in which commissioned. (c) Home address as last reported to the War Department. (d) Date of birth. (e) Title of present position (governmental payroll designation). (f) Salary or wages. (g) Civil service rating, if any. (h) Length of time in present position. (i) Total time in the employ of the present department or agency. (j) Total time in federal employ. (k) Detailed description of present duties. Include information as to the availability of a replacement or the time required to train one. (l) Length of deferment desired (until—give date).

By order of the Secretary of War:

E. S. ADAMS,
Major General,
the Adjutant General.

HARVARD'S BASE HOSPITAL ORDERED ABROAD

Orders for the mobilization of Base Hospital Unit No. 5 have been received, it was announced by Harvard University, January 5. While preliminary orders advising personnel that they would be shortly called were received on December 24, the latest orders provide for report to an eastern seaboard camp in the near future and their departure from the country shortly thereafter. At the request of the university, Dr. Elliott C. Cutler, director, will not proceed with the unit. Dr. Thomas H. Lanman, chief of the surgical service of the unit, will serve as acting director. The request for Dr. Cutler's release was made because of the need of his services in Boston.

Base Hospital No. 5, organized by Harvard Medical School, is a continuation of Base Hospital No. 5 which operated in France during the last war. Associates of the following Boston hospitals and departments of Harvard University are included among the officer personnel: Boston City Hospital, Beth Israel Hospital, Boston Lying-in Hospital, Children's Hospital, Deaconess Hospital, Eye and Ear Infirmary, Faulkner Hospital, Hygiene Department of Harvard University, Harvard Dental School, Harvard School of Dental Medicine, Harvard Medical School, Massachusetts General Hospital and Peter Bent Brigham Hospital.

Among the nursing personnel will be forty-four nurses from the Boston area.

The officer personnel of the hospital at present is as follows:
Unit director: Lieut. Col. Thomas H. Lanman.

Surgical service: Lieut. Col. Thomas H. Lanman, chief; Major Augustus Thorndike, assistant chief; Majors Edwin F. Cave, J. E. Dunphy, Carlyle G. Flake, John H. Harrison, Robert Zollinger; Capts. Thomas W. Botsford, Thomas Cavanaugh, Stanley O. Hoerr, Lee G. Kendall, John L. Newell, T. B. Quigley, Charles P. Sheldon, Fiorindo A. Simeone, Dean W. Tanner, Richard Warren; 1st Lieuts. Chilton Crane, Charles L. Dimmler Jr., Robert G. Snow, Robert R. White.

Medical service: Lieut. Col. Theodore L. Badger, chief; Major Eugene O. Eppinger, assistant chief; Majors Harold F. Corson, J. E. Greene, Stanley Kimball, Harold Levine, Charles May, Henry N. Pratt; Capts. Arthur Baldwin, Richard V. Ebert, Charles P. Emerson, Joseph Frothingham, Paul Kunkel, Jack D. Myers, Carey M. Peters, Gordon A. Sanders, Roy L. Swank; 1st Lieuts. Samuel Asper, Henry H. Brewster, Joseph H. Burchenal, Sibley W. Hoobler.

Laboratory: Major Dale Friend, Capt. Joseph H. Bragdon, 1st Lieut. Richard Ford.

X-ray: Major Magnus I. Smedal, Capt. Donald P. Ham, 1st Lieut. Ralph C. Moore.

Headquarters: Capt. John J. Kneisel.

Registrar: Majors Beach Hazzard, Norman Vaughan, Quartermaster Corps; 1st Lieut. Frederick P. Ross.

Mess: Major George F. Wilkins.

Dental Corps: Major Moses S. Strock; Capts. Henry J. Carney, Harry Stone, George Sullivan; 1st Lieuts. Maurice Dinnerman, Gerald L. O'Neill, Maxwell Perman.

BLOOD BANKS FOR CIVILIAN DEFENSE

The Medical Advisory Board of the Office of Civilian Defense held a joint meeting with the Regional Medical Officers at the national headquarters in Washington, Dec. 8-9, 1941. Mayor La Guardia, U. S. Director of Civilian Defense, addressed the group briefly, urging action on two counts: organization of emergency medical field units and designation of field casualty stations in the target areas on both coasts.

The medical defense officials decided that it is necessary that blood banks, as well as collecting stations for plasma and serum, similar to those developed by the American Red Cross for the Army and Navy, be established for civilian use. It was pointed out that a supply of whole blood and of plasma and serum for use among civilians is essential, as the armed forces will not be able to release any of their supply under conditions of actual warfare.

Dr. Wallace D. Hunt, medical officer for the Ninth Civilian Defense Region with headquarters in San Francisco, reported that the important cities of the West Coast, especially those in California, had well developed disaster services and that these were being rapidly integrated into the comprehensive civilian defense program.

Members of the Medical Advisory Board who attended the meeting were Drs. George Baehr, New York, chairman of the board and chief medical officer of the Office of Civilian Defense; Robin C. Buerki, Philadelphia; Elliott C. Cutler, Boston; Oliver B. Kiel, Wichita Falls, Texas; Albert McCown, Washington, and Huntington Williams, Baltimore. Dr. Fred Rankin, Lexington, Ky., was unable to be present.

Regional medical officers present, in addition to Dr. Hunt, were Drs. Allan M. Butler, Boston, first civilian defense region; H. Van Zile Hyde, New York, second region; W. Ross Cameron, Baltimore, third region; Judson D. Dowling, Atlanta, Ga., newly appointed to the fourth region; William S. Keller, Columbus, Ohio, fifth region, and Witten B. Russ, San Antonio, Texas, eighth region.

Others present included Miss Mary Beard, director of nursing service, American Red Cross; Dr. James A. Crabtree, executive secretary, Health and Medical Committee of the Office of Defense Health and Welfare Services; Dr. Thomas Parran, Surgeon General, and Dr. Erval R. Coffey of the U. S. Public Health Service and Dr. Martha Eliot of the U. S. Children's Bureau.

SANITARY ENGINEERING IN CIVILIAN DEFENSE

Ralph E. Tarbett, senior sanitary engineer, U. S. Public Health Service, is chief sanitary engineer of the medical division of the Office of Civilian Defense. Mr. Gordon E. McCallum, sanitary engineer, U. S. Public Health Service, has been commissioned in the Public Health Service Reserve and assigned to the third civilian defense region (Pennsylvania, Maryland, District of Columbia and Virginia) plus West Virginia and Ohio. Mr. McCallum is stationed in Washington. Mr. John H.

Brewster, Troy, N. Y., at one time with the Indiana and later with the New York state health department, has also been commissioned in the Public Health Service and assigned to the first and second defense regions.

The National Technological Civil Protection Committee, an advisory group to the War Department, has agreed to serve in the same capacity to the Medical Division of OCD in matters of public health engineering. Mr. Walter Binger of New York, representing the American Society of Civil Engineers, is chairman of this committee. Other members represent other national engineering and related organizations.

The sanitary engineering section will work through state defense councils with state health departments in planning to meet the problems that may arise from belligerent action. Of these, the maintenance of a continuous supply of safe water is of first importance.

CIVILIAN DEFENSE IN THE DISTRICT OF COLUMBIA

The plans of the third defense area, comprising the District of Columbia, Maryland, Virginia and Pennsylvania, were discussed on December 16 at a conference in Washington called by Dr. W. R. Cameron, Hagerstown, Md., medical officer of the third defense area, and attended by Drs. W. P. Dodds of Harrisburg, Pa.; C. R. Edwards and R. H. Riley, both of Baltimore; William Grossmann and I. C. Riggin, both of Richmond, Va.; George C. Ruhland and John Reed of the District of Columbia, and army and navy officers. The Maryland, the Virginia and the District of Columbia medical officials agreed on plans for two five hundred bed evacuation hospitals in Bethesda, Md., and the Arlington, Va., area to be used for the less seriously injured in order to make beds available in the city hospitals in case of need of emergency treatment of numerous casualties.

Plans to mobilize the fifteen hundred doctors in the Washington area for emergency civilian defense medical work were discussed before the Medical Society of the District of Columbia, December 10, by Dr. Oscar B. Hunter, assistant chief civilian defense medical officer. Physicians will be assigned to the various hospitals from which they will conduct emergency civilian defense work. Among the medical officers listed as assistant chief medical officers are William E. Clark (voluntary agencies), W. R. Morris (casualty stations), Philip O. Pelland (transportation), Paul F. Dickens (government agencies), James A. O'Keefe (organization assistant), Phillip T. Johnson (organization assistant for Negro medical group), William B. King (liaison officer for metropolitan Virginia), Reed N. Calver (liaison officer for metropolitan Maryland), O. K. Fike (hospital mobilization) and Oscar B. Hunter (personnel).

LECTURES ON FIRST AID

The Medical Society of the County of New York, the New York Academy of Medicine and the chief of Medical Emergency Service for Manhattan sponsored a series of four lectures and demonstrations on first aid given to New York physicians the early part of January at the New York Academy of Medicine building, 2 East 103d Street. Dr. George Baehr, director of the medical division, National Office of Civilian Defense, Washington, D. C., discussed the organization of medical emergency service in New York; Capt. Charles D. Scully of the New York chapter of the American Red Cross discussed principles and management of first aid; Dr. Robert H. Kennedy, director of surgery at Beckman Hospital and chairman of the National Fracture Committee, the emergency care and transportation of persons with fractures; Dr. Frederick W. Bancroft, New York, the emergency care of abdominal, head and chest injuries and burns, and Dr. Lawrence M. Thompson the emergency care of wounds, hemorrhage and shock. The lectures were based on the course in advanced first aid prepared by the American Red Cross and the Office of Civilian Defense and were announced by Dr. Condit W. Cutler Jr., borough chief of emergency medical service. Dr. Baehr said that emergency medical field units had been organized and drilled in eighty hospitals in the metropolitan area and that the medical personnel of this emer-

gency medical service now comprised two thousand, one hundred and forty-eight physicians and nurses. These field units are subdivided into emergency squads, and certain squads are on emergency call day and night.

MEETING OF HOSPITAL PROTECTION COMMITTEE

The Subcommittee on Air Raid Protection of Hospitals of the Medical Advisory Board, Office of Civilian Defense, met in New York, Dec. 6, 1941, to complete a report, which will shortly be published by the Office of Civilian Defense as an official bulletin. Present at the meeting were Drs. George Baehr, chairman of the Medical Advisory Board; Robin C. Buerki, Philadelphia, a member of the Medical Advisory Board and chairman of the subcommittee; Asabel J. Hockett, New Orleans, Joseph Turner, New York, and Anthony J. J. Rourke, New Orleans, members of the committee; Ward L. Mould of the Washington headquarters; John J. Bourke, Albany, N. Y., research director, New York State Health Preparedness Commission; H. Van Zile Hyde, New York, regional medical officer for the second region, and Dr. James M. Mackintosh, professor of public health, University of Glasgow, Scotland, and former chief medical officer of the Scottish Ministry of Health, who has been acting as a consultant to the subcommittee.

ARMY SCHOOLS FOR COOKS AND BAKERS

There are now about fifty Army bakers' and cooks' schools throughout the nine corps areas, the Quartermaster Corps announces, and they are turning out bakers, cooks, mess sergeants and mess officers with clocklike regularity. At a typical school, 5,648 students were graduated during the past year, compared with an average of 175 a year that had been graduated since the World War.

In general, courses have been revised to provide shorter and more intensive training. The mess officers' course has been cut to one month, and officer students spend forty hours in actual classroom work. Mess sergeants also complete their training in one month, but all the students in this course are already graduate cooks. Student bakers and cooks are put through a two months course.

EMERGENCY MEDICAL EQUIPMENT

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York, sent eight emergency medical field sets, January 2, to medical directors of the Second Civilian Defense Region, comprising New York, New Jersey and Delaware. Each set consists of two portable cases equipped with instruments and supplies, which will be placed in hospitals and first aid posts in various locations, whence they can be readily transported to potential points of disaster. Plans are being made by the committee for a nationwide campaign to provide quantities of these sets in each of the nine civilian defense regions set up by the Office of Civilian Defense; it is estimated that seven hundred and twenty-four sets will be required to meet the needs of New York City alone.

BRYN MAWR NAVAL HOSPITAL PHYSICIANS ORDERED TO DUTY

Eighteen physicians of the staff of Naval Base Hospital No. 33, organized at Bryn Mawr Hospital, Pa., were ordered to report for active duty at the Navy Yard, Washington, D. C., January 5. This unit is expected to take over a naval base hospital at some undesignated location. The remainder of the medical complement and enlisted personnel will be made up in the field. The head of the unit is Dr. George Wagoner of Haverford, chief of orthopedics at Bryn Mawr Hospital; the medical chief is Dr. John K. Durkin and the surgical chief Dr. Frederick R. Robbins, both of Bryn Mawr. This is the first of five military hospitals in the Philadelphia area to be ordered to active duty.

ORGANIZATION SECTION

MEDICAL RELATIONSHIPS OF THE AMERICAN NATIONS

LOIS STICE

CHICAGO

The United States Department of State in 1938 established a Division of Cultural Relations. In 1940 the Office of the Coordinator of Commercial and Cultural Relations between the American Republics now called Office of the Coordinator of Inter-American Affairs, was established with Nelson Rockefeller at its head. There is also an Interdepartmental Committee on Cooperation with the Latin American Republics, in which seventeen or eighteen government agencies are represented.

Older than any of these and forming a background for their development is the Pan American Union, founded in 1890 as the "Commercial Bureau of American Republics" following the first International Conference of American States. In 1902 the second conference of American states created the Pan American Sanitary Bureau, separate from the Pan American Union but cooperating with it and maintaining offices in the beautiful Pan American Union building, one of the show places of Washington. This bureau handles all medical and health questions that come to the union.

The Pan American Sanitary Bureau holds a conference every few years; the next will be in Rio de Janeiro in 1942. Between times the bureau calls to Washington health officials of the twenty-one republics for the Pan American Conference of Directors of Health. Thus the public health problems of the Western Hemisphere are discussed in an atmosphere of friendly and cordial cooperation.

The Rockefeller Foundation has had a powerful influence in developing mutual understanding between Latin America and the United States with its fellowships and study tours for health officials, its support of medical schools and public health institutions and subsidy of rural health organizations, as well as its direct scientific work.

More than twenty years ago, for instance, the foundation began to encourage an "institute of hygiene" at São Paulo, Brazil. Through the years it has quietly continued to help in similar ways. One of the latest developments is an arrangement concluded with the government of Ecuador for a national institute of hygiene at Guayaquil. The foundation's policy is to support such undertakings and gradually to withdraw as the authorities are able to take them over. Not only will it contribute equipment and a part of the funds for maintenance of the new institute until Ecuador assumes full responsibility five years hence, but it has awarded fellowships to young men to study in the United States before taking charge of its technical departments.

Spectacular among the foundation's activities in South America has been its fight against yellow fever. After ten years of work, it was thought that yellow fever had been eliminated from the Americas, but suddenly in 1928 the disease flared up in Brazil. The fight began all over again. Intensified studies in subsequent years have led to the discovery of a new type of jungle yellow fever and to the development of a vaccine. As a result of studies in Colombia in 1940 it is now pos-

sible by tests on animals to determine the risk to human beings entering a region. Formerly it was necessary to wait until some one died of the disease before the danger was discovered.

Parallel with the activities so far outlined, private medical organizations were making many contributions to inter-American acquaintance. Most of us have been blissfully ignorant of these efforts, which were unheralded outside the medical profession.

From 1919 through 1928 the American Medical Association published an edition in Spanish of its official publication, *THE JOURNAL*. Its library has for many years indexed the leading medical journals of the rest of the hemisphere and *THE JOURNAL* each week has published abstracts of their most important articles, thus bringing the best medical literature published in Spanish and Portuguese on this side of the Atlantic to the attention of North American physicians.

The American College of Surgeons has since its founding in 1913 offered fellowship to Central and South American surgeons, and its officers made numerous tours to the Latin American countries in the interest of closer ties among colleagues of the hemisphere. Recently the college reported that it has two hundred and forty-six Latin American fellows, of whom a goodly number attended the annual congress in Boston in November.

For the past five or six years the American Hospital Association has had a committee on Latin American relations. Now this association is sponsoring an Inter-American Hospital Association, formed last September in Atlantic City. The American Public Health Association opened its membership to health authorities of Mexico, Cuba, Central America and South America more than fifty years ago and now has members in sixteen of those countries. Twenty-four public health officials of Latin American countries were special guests at the October meeting of the association at Atlantic City.

CONVENTIONS

There have been Pan American medical congresses from time to time for many years. The American Medical Association took the lead in organizing an important one as far back as 1893 in Washington, D. C., inspired by celebrations of the four hundredth anniversary of Columbus's voyage to the New World. *THE JOURNAL* of Sept. 9, 1893 made this editorial statement:

The Congress is looked upon as the initial step towards cementing the grand brotherhood of American States into commercial and professional union. Political union may not be desirable, but commercial and professional unity of action will develop the Americas as nothing else could develop them. The republican idea, too, will gain new strength throughout the world as an indirect effect of these periodical exhibitions of power.

Another passage that sounds as if it might have been written during the present recrudescence of interest in inter-American relations occurred in the pre-

dential address of Dr. William Pepper, then president of the University of Pennsylvania, who quoted advice from Benjamin Franklin:

It is a true saying that to know is to excuse and more than this, in regard to nations if not strictly in regard to individuals it may be added that to know is to love. We turn with quickened interest to the sage advice of the illustrious Franklin, who in 1749 embodied in his plan for the organization of the University of Pennsylvania an earnest advocacy of the thorough teaching of the Spanish and Portuguese tongues as likely to hasten the development of those reciprocal relations which he foresaw would inevitably arise between the countries of the two Americas.

This brilliant 1893 congress was the beginning of a series that ended during the upheaval of the World War.

Five Pan American congresses on tuberculosis have been held, the latest in October 1940 in Buenos Aires and Córdoba, Argentina. A North American physician who attended the recent one wrote later of the Argentine physicians: "Their hospitality is magnificent and their desire to exchange ideas seems genuine. It is my belief that we should reciprocate to the full extent that they desire our participation."

The second Pan American Congress of Endocrinology was held in March of this year (1941) in Montevideo, Uruguay. Endocrinologists from many parts of the United States made this trip.

Back in 1925 a group of New York physicians organized the Pan American Medical Association as an agency through which they could promote inter-American congresses and extend courtesies to visiting physicians from the other American republics. Seven congresses have been held, some of them in connection with cruises of several weeks' duration. On these trips physicians traveled first to Havana, then Panama, Mexico City, Dallas, Venezuela, Brazil and in 1938 to Havana and the West Indies again. The eighth congress is scheduled for Buenos Aires in August 1942.

Several years ago a number of New York physicians interested in physical therapy organized the Latin American Congress of Physical Therapy, X-Ray and Radium, which visited Mexico City for its first meeting and a few years later took a similar trip to Guatemala City. Still another society that has devoted itself to Latin American friendship is the International Spanish-Speaking Association of Physicians, with headquarters in New York.

Medicine has played a part in several general congresses in which the Americas have joined for the promotion of both scientific knowledge and mutual acquaintance.

The American Scientific Congress, which met with great pomp in Washington in May 1940, was the eighth of a series that began in 1898. One of its eleven sections presented an impressive program on public health and medicine. An announcement of one of the earlier congresses in this series indicates that friendship between the Americas has long been a hope of scientific men, expressed in this declaration:

These Pan American Scientific Congresses, as must be apparent to your discernment and to that of your fellow members, are of the utmost and ever increasing importance both in the ideological field and in connection with international solidarity.

Seven meetings have been held of the Pan American Child Congress, which devotes a major part of its program to discussions of health and medical problems. The eighth congress was to have been held in San José, Costa Rica, in 1939, but events of that fateful period

caused its postponement. Before the United States entered the war, plans were in the making to hold the deferred meeting in Washington next year.

With the experience of these earlier undertakings as a basis, Pan American relations in medicine have expanded in unison with the general awakening of the North and the South to the need for common action.

The tragedy of Europe has extinguished for the time being and possibly for years to come many international medical organizations which brought together medical men of all countries every few years and thus contributed to the worldwide dissemination of medical knowledge. Forced abandonment of international gatherings has given still another stimulus to intermingling of North, South and Central Americans. Physicians who once enjoyed meeting their colleagues from all continents have begun to build up Pan American assemblies to take the places of those of worldwide membership.

When the last International Congress of Microbiology met in New York in September 1939, just as war broke over Europe, an Inter-American Society of Microbiology was organized on the spot. Plans were started for a congress in Rio de Janeiro in 1942.

That same fall eye specialists attending the American Academy of Ophthalmology and Otolaryngology, seeing that the International Congress of Ophthalmology would be disrupted, laid plans for a Pan American Congress of Ophthalmology.

That meeting, held in Cleveland in October 1940, brought about twenty eye specialists from Brazil, Cuba, Chile, Costa Rica, Puerto Rico, Colombia, Guatemala and Panama. It resulted in "a definite and marked entente cordiale among the ophthalmologists of North, South and Central America," those who carried the meeting to a successful conclusion reported afterward. A permanent organization was formed and many plans are now being evolved for exchanges of medical journals, exchanges of students and another meeting in Montevideo, Uruguay, in 1943.

The Catholic Hospital Association welcomed to its meeting in Philadelphia last June representatives of ten republics of the South. There it was pointed out that hospitals were founded in the Western Hemisphere by Spanish pioneers long before the early settlements in the eastern part of North America. Plans to admit hospitals of Mexico to the association are to be presented next year and, as occasion arises, those of the South American republics will also be admitted, it was predicted.

Another step made by hospital groups was the Inter-American Institute for Hospital Administrators held in December 1940, when hospital officials from ten countries in the Caribbean area gathered in the beautiful old city of San Juan, Puerto Rico, for two weeks of discussions. Puerto Rico is in the unique position of belonging both to the United States and to the Ibero-American countries, to the North by political ties and to the South by ties of language and origin.

"A cultural, social and scientific bridge between the Americas passes through the West Indies, and the medical pillars of this bridge were unquestionably strengthened by the Inter-American Institute," one of the participants reported.

Cancer specialists recently announced a Pan American League Against Cancer to replace the International Union Against Cancer, now unhappily in eclipse because of the war. The league is working toward a cancer

congress to be held in Brazil in 1942. Radiologists are also exploring the idea of a Pan American congress.

The International College of Surgeons turned its 1941 assembly into an Inter-American meeting in Mexico City with speakers from a dozen or more of the Latin American countries on its program. Dentists too are contributing to the campaign for mutual acquaintance. The Mexican Association of Orthodontia organized its third "medicodental" convention in Mexico City in June and invited not only dentists but many physicians from the United States to present papers.

Now comes the American Medical Association, with its sixteen scientific sections representing all specialties in medicine, with plans to make its ninety-third annual session in Atlantic City in 1942 a Pan American meeting, almost fifty years after the great Columbian celebration in Washington.

The Board of Trustees at the Cleveland meeting last June reported that it had been "impressed with the importance of facilitating further cooperation of this type in the interest of scientific advancement and unity of the American continents."

The House of Delegates, the official legislative body of the Association, adopted the following recommendation introduced by the Council on Scientific Assembly, the group which plans the scientific sessions:

The Council on Scientific Assembly recommends to the House of Delegates of the American Medical Association that the annual meeting to be held in Atlantic City in 1942 be made a Pan American meeting and that representatives from all South and Central American countries, Mexico, Cuba and Puerto Rico be invited to attend and to participate in the scientific session program.

The Delegates then asked the Trustees to appoint a Commission on Pan American Relations. This was done immediately and the group has already started that work behind the scenes which must precede a successful convention.

Convention visits are of course fleeting. They are serving as an introduction, but other things are being done on a personal basis. The U. S. Department of State began last January a policy of inviting distinguished leaders of the other American republics to visit the United States for two or three months each. There have been several physicians among these guests of the government. A professor of psychiatry in São Paulo, Brazil, who is also president of a Brazilian organization for advancing cultural relations with the United States, came in the spring and an Argentine radiologist in the summer. Both attended medical meetings and visited hospitals and universities.

Besides these visitors coming by official arrangements, many are coming on their own initiative. One alert Brazilian eye specialist this year made his fourth annual trip to attend a convention in his field.

SCHOLARSHIPS

Meanwhile the "norteamericanos" are finding their way south, some under the State Department's travel grants, others under diverse auspices. Already mentioned are those who have attended Pan American conventions. In the past few months a Harvard teacher and one from Cincinnati have gone to Bogotá, Colombia, to lecture to physicians and medical students, and a Philadelphia specialist to advise on the building of a tuberculosis sanatorium. The president of the Pan American Congress of *Ophthalmology* flew to Brazil in July to read a paper at the national meeting of eye specialists in Rio de Janeiro.

Most productive perhaps of all means of interchange between the Americas is the exchange of students and professors. The State Department reported a few months ago that about fourteen hundred students from the other republics were in the United States in 1940-1941.

Long before the present awakening, or reawakening, of interest, certain far seeing and wide ranging agencies were encouraging students of the Americas to study in other parts of the hemisphere. The International Institute of Education, the Rockefeller Foundation and the Guggenheim Foundation have been actively promoting the interchange for years, and their efforts have increased many fold in the recent past.

Cornell University Medical College, New York, and the University of Havana have an interesting arrangement for exchanging students and faculty members for several weeks at a time for periods of study. The plan has apparently worked well, for it was begun with an agreement for only one year and was continued last year for another period.

Now the governments of the republics are taking a hand. Several months ago the State Department reported that fourteen graduate students were studying in the United States under the terms of the Convention for the Promotion of Inter-American Cultural Relations, signed at Buenos Aires in 1936. Three of this group are physicians, including one from remote Paraguay.

Another government project is under the egis of the U. S. Public Health Service, which has made available fellowships "in the sciences related to public health." These cover a wide field, including medicine, dentistry, pharmacy, nursing, sanitary engineering, vital statistics and bacteriology. The fellows are selected by the Surgeon General on recommendation of the Pan American Sanitary Bureau with the approval of the Secretary of State. Newest of all are the hospital internships arranged for graduates of Latin American medical schools through the cooperation of the Office of the Coordinator of Inter-American Affairs (popularly called the Rockefeller Committee), the Pan American Sanitary Bureau and the participating hospitals and clinics. Thirty-seven medical graduates arrived in August to begin work under this arrangement.

In recent months numerous fellowships and scholarships have been offered by special groups. The American Foundation for Tropical Medicine has established fellowships that will allow young physicians to study tropical medicine at Tulane University in New Orleans. The Cleveland Clinic has invited a young Argentine surgeon to spend a period of study on its staff. The Dazian Foundation, bequest from the fortune of a famous theatrical costumer, is financing a fellowship at Mount Sinai Hospital, New York.

STUDY OF LANGUAGE

Efforts to foster more intimate relationships in the field of medicine and its related sciences are taking other forms too. Several enterprising organizations have issued some of their literature in Spanish in order to make special information available to Spanish and Portuguese speaking physicians. If one may judge from remarks heard in a recent discussion, this service will be appreciated. At a gathering in honor of a group of Mexican educators, one of the visitors was asked whether medical textbooks of the United States were widely used in Mexico. Regretfully he replied that they were not, first, because they were too expensive and, second, because too few physicians in Mexico read English.

As to the language barrier, it may be said that this is being overcome on both sides of the border. This same group of Mexicans reported that English is now a required subject in the schools of Mexico. Most of the visitors who come from the other republics have bestirred themselves to learn English either in school or as a prerequisite to their trips.

Now in the English speaking part of the hemisphere, where the population has been so predominantly of the English tongue that it has never been forced to learn other languages, one hears of Spanish and Portuguese classes on every side. A group of Chicago physicians has engaged a Spanish teacher to come to their hospital several times a week and put in an hour or so drilling the doctors in order that they may better understand and deal with their Spanish speaking students.

A word just here in favor of Portuguese, which seems to have eluded North Americans almost entirely. Brazilians point out that South America has a Portuguese speaking population practically as large as that which speaks Spanish and they cannot help feeling that at least part of the translations and the lessons now in progress should be in Portuguese.

What of the conventions in which physicians of three languages mingle? This problem was admirably solved at one meeting by the use of lantern slides. Condensed versions of all papers were translated into Spanish or English, as was necessary, and these versions were shown on slides, giving summaries in the other language as the speaker progressed. The young woman who made the translations sat by the projector with a full copy of the paper and carefully listened as she directed the placing of the slides on the screen.

Returning to the recital of some specific things that have been done in the matter of publications: First, perhaps, should be mentioned the *Bulletin of the Pan American Sanitary Bureau*, which has long been published in English, French, Spanish and Portuguese. The U. S. Pharmacopeia, vast official list of drugs used in North American medicine, appeared in Spanish for Pan American use in 1938. *Modern Hospital*, a monthly magazine, published in 1940 "El Libro del Hospital Moderno," a reference book on hospital practice. The National Foundation for Infantile Paralysis this year issued its valuable little pamphlet "Nursing Care of Patients with Infantile Paralysis" in Spanish.

STRENGTHENING INTERNATIONAL TIES

The *American Review of Tuberculosis* began in October to publish summaries of its articles in Spanish. "It is hoped that this will increase the usefulness of the *Review* for our Latin American colleagues and stimulate their interest in the work published in the *Review*," the announcement said. "It should further strengthen the international ties of tuberculosis work."

Almost every one knows that the matter of unfavorable exchange of money is a standing difficulty of the Latin American countries in their dealings with the United States. At least one scientific group has made a move to alleviate this handicap in its field. The trustees of *Biological Abstracts* have offered to reduce the price of that publication to any one who wishes to send a set to a Latin American institution. It has been found that about one hundred and fifty research and educational institutions in Latin America did not subscribe to this tool of the scientist either because they did not have funds or because of the inequality of exchange.

More thinking along this line appeared in a letter to *Science* not long ago. The writer observed that few North American scientific periodicals go to Latin America and thought one reason might be the subscription rates, extremely high when translated into Latin American currencies. He had an idea that societies which could afford it might establish "exchange memberships" with similar organizations in the other countries. The exchange members would receive extra copies of their journals to be mailed to the members abroad, who would do the same with their periodicals. He also thought some societies might set up subscription rates in the currencies of the Latin American countries.

A different step in practical collaboration was taken recently by the University of California when it began small shipments to Lima, Peru, of radioactive phosphorus produced in the university's pioneering radiation laboratory by the cyclotron. This makes it possible for Peruvian medical authorities to try the radioactive material as it is being cautiously tried in this country in the treatment of cancer, leukemia and other diseases in which radium itself has been found beneficial. The artificially made radiations last only about two weeks, but air transportation takes the phosphorus to Lima within two or three days after its manufacture, leaving about ten days in which it is usable.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Bills Introduced.—H. R. 6316, introduced by Representative Martin J. Kennedy, New York, provides compensation for injuries or death sustained by volunteer civilian defense workers in line of duty. H. R. 6324, introduced by Representative Ditter, Pennsylvania, provides that each person who enters into the armed forces of the United States shall be given a physical examination by medical officers at the time of entry into service. On the termination of such service, the bill provides, each person shall be given another physical examination by medical officers and a record shall be made of the findings of such examination and of any injuries, illnesses or disabilities suffered by him during his period of service. Each person who enters into service must be given a medical statement showing any

physical defects noted either on the examination given at the time of entry into service or on the examination given at the termination of the service.

DISTRICT OF COLUMBIA

Bills Introduced.—S. 2183, introduced by Senator McCarran, Nevada, proposes to amend the healing arts practice act by providing for the annual registration of licentiates and by imposing a \$2 annual registration fee. H. R. 6297, introduced by Representative Robinson, Utah, provides for the issuance of a license to practice chiropractic to Wesley K. Harris. H. R. 6344, introduced by Representative Reece, Tennessee, provides for medical examinations of persons charged with driving while under the influence of liquor.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Changes in Health Personnel.—Dr. Ralph L. Best, Drumright, Okla., has been made health officer of Greene County with headquarters in Eutaw.—Dr. Corinne S. Eddy, Centerville, has been appointed health officer for Bibb County; she was formerly connected with the unit in Cleburne County.

Quarters for Industrial Hygiene Division.—Plans have been announced to move the state division of industrial hygiene from Montgomery to Birmingham, with space in the city hall building, where a laboratory will be installed. Dr. Edwin H. Place, Montgomery, was recently placed in charge of the division. The change is being made because Birmingham is the most logical center of industrial activity and because of demands in connection with the defense program, it was stated.

CALIFORNIA

Personal.—Dr. Ladislav Stofa, Marysville, has been named medical superintendent of Yuba County Hospital, Marysville.

—Dr. Charles H. Kellaway, director of the Hall Research Institute, Melbourne, Australia, was a recent visitor at the University of California Medical School, San Francisco.

Buenos Aires Physician Chosen Herzstein Lecturer.—Dr. Eduardo Braun-Menéndez, lecturer in physiology and director of cardiovascular investigations, Institute of Physiology of the University of Buenos Aires Faculty of Medical Sciences, has been chosen to deliver the Herzstein Lectures this year. The lectures are delivered on alternate years under the direction of the University of California Medical School and Stanford University School of Medicine, San Francisco. This year they will be given at the University of California, extension division auditorium, March 9-13. Dr. Braun-Menéndez's topic will be "Experimental Renal Hypertension." The Herzstein lectures were established in 1929 under a provision of the will of the late Dr. Morris Herzstein of San Francisco.

CONNECTICUT

State Society Creates Associate Membership.—To permit medically prominent persons in Connecticut who are not licensed to practice in the state to join with the state medical society in furthering its objectives, the society amended its by-laws at its annual session in 1941 to provide for associate membership. As a result of this action the state medical journal for January announces the following associate memberships:

Harold S. Burr, Ph.D., E. K. Hunt professor of anatomy, Yale University School of Medicine, New Haven.

Dr. John F. Fulton, Sterling professor of physiology at Yale medical school.

Dr. Howard W. Haggard, director of laboratory of applied physiology at Yale University.

Ira V. Hiscock, C.P.H., professor of public health at Yale medical school.

Dr. Cyril N. H. Long, Sterling professor of physiologic chemistry at Yale medical school.

Friend Lee Mickle, M.Sc., director of bureau of laboratories of the Connecticut State Department of Health, Hartford.

William C. Welling, B.A., director of the bureau of vital statistics of the state department of health, Hartford.

DISTRICT OF COLUMBIA

Guest from Haiti.—Camille Lherisson, D.P.H., professor of biology, National School of Medicine, Port-au-Prince, Haiti, has arrived in Washington at the invitation of the U. S. Department of State to visit schools of medicine and departments of biology throughout the country. Dr. Lherisson received his degree in public health at Harvard University. He also studied at McGill University Faculty of Medicine, Montreal, Canada.

Garrett Resigns as Health Security Administrator.—Mr. Ross Garrett, administrator of Health Security Administration since its organization in 1938, has resigned. Mr. Garrett organized the Central Admitting Bureau for Hospitals and the Medical Dental Service Bureau in 1935. These organizations were consolidated in 1938 and became known as the Health Security Administration. Mr. Garrett has set up offices in Washington in the Medical Science Building and, according to his letterhead, renders consulting service in hospital and health activities.

ILLINOIS

New Director of Tuberculosis Control.—Dr. Edward K. Steinkopff, Milwaukee, medical consultant to the Anti-Tuberculosis Association of Wisconsin, has been appointed chief of the division of tuberculosis control of the Illinois State Department of Health, effective February 1, with headquarters in Springfield. The appointment inaugurates a new program of case finding and tuberculosis control in the state, based on an expected increase in the incidence of tuberculosis anticipated usually under war conditions. In announcing Dr. Steinkopff's appointment, Dr. Roland R. Cross, Springfield, state director of public health, stated that provisional tabulations show that there was 10 per cent more tuberculosis reported in the state in 1940 than in 1939 and perhaps 15 per cent more in 1941 than in 1940. Dr. Steinkopff graduated at the University of Illinois College of Medicine in 1929.

Chicago

Branch Meetings.—Dr. Roy R. Kracke, professor of pathology and bacteriology, Emory University School of Medicine, Emory University, Ga., discussed the "Effect of Drugs on the Hemopoietic System" before the North Suburban Branch of the Chicago Medical Society, January 8.—Dr. Alfred W. Adson, Rochester, Minn., addressed the North Shore Branch, January 6, on "Diagnosis and Treatment of Protruded or Ruptured Intervertebral Disk."

New Executive Appointments at St. Luke's.—Dr. Ambrose P. Merrill Jr., assistant director of St. Luke's Hospital, has been appointed medical director of the hospital, a newly created position. Leo M. Lyons, city relief commissioner since July 1936, has been appointed executive director, effective February 1. He will be directly responsible to the president of the hospital for its general management. Mr. Lyons began his public career in the Rockford public schools, where he was director of health education and recreation from 1915 to 1930.

Personal.—George F. Forster, Ph.D., has resigned as assistant chief of the division of laboratories, Illinois State Department of Health, to become associate professor of bacteriology in Loyola University School of Medicine, effective January 1. Dr. Forster received his Ph.D. degree at the University of Wisconsin, Madison, in 1922.—Fred C. Koch, Ph.D., Frank P. Hixon distinguished service professor emeritus of biochemistry and recently retired as chairman of the department of biochemistry, University of Chicago, has been elected an honorary foreign member of the National Academy of Medicine of Buenos Aires.

Research Committee on Cancer.—The University of Chicago announces four new appointments to its committee on cancer: Dr. William Bloom, professor and chairman of the department of anatomy; Earl A. Evans Jr., Ph.D., associate professor of biochemistry; Carl R. Moore, Ph.D., professor and chairman of the department of zoology, and Dr. Arno B. Luckhardt, professor of physiology. The new appointments bring to eighteen the committee members now engaged in basic research on cancer. The committee was created in 1938 to correlate the university's diverse research facilities in a clearing house for the thirteen departments, ranging from physics to surgery, which are participating in the research. The first gift the committee on cancer received was one of \$2,250 to establish a lectureship on cancer. This gift was made by the Educational Association on Cancer, an organization of Chicago women which for many years has been interested in the acquisition and dissemination of information on cancer.

INDIANA

Program on Nutrition.—At a meeting of the Indiana State Nutrition Council in Indianapolis on November 29 Dr. John W. Ferree, Indianapolis, director and secretary of the state board of health and chairman of the council, appointed five subcommittees to organize a statewide educational program and plan a state nutrition conference.

State Board Creates Public Relations Post.—Mr. Creath Smiley, who has been associated with the state department of public welfare, has been appointed public relations counsel for the state department of health, a newly created position. Mr. Smiley has been handling radio and newspaper publicity for the department of welfare. In his new position he will prepare interpretative articles for state newspapers and magazines and act in an advisory capacity in matters relating to public relations. He graduated at the Indiana University School of Journalism in 1938.

Annual Secretaries Conference.—The Indiana State Medical Association announces its annual secretaries' conference, to be held at the Indianapolis Athletic Club, Indianapolis, January 25. Among the speakers will be:

- Clarence A. Jackson, Indianapolis, chairman and civilian defense director, Indiana Defense Council, What Is Expected of Physicians in the Plans for Civilian Defense?
Dr. Jonathan Forman, Columbus, Ohio, Methods in Securing an Enabling Act for Prepaid Medical Care.
Dr. Samuel F. Seeley, major, medical corps, U. S. Army, and executive secretary, Procurement and Assignment Service for Physicians, Dentists and Veterinarians, Washington, D. C., Future Needs of the United States Army as to Physicians.
Dr. Charles H. Phifer, Chicago, president of the Illinois State Medical Society, Social Security Medical Problems.

The annual dinner in the evening will be addressed by General Lewis B. Hershey, director, Selective Service System, Washington, on "Procurement and Assignment of Physicians for Defense."

IOWA

Interprofessional Meeting.—The fifth annual state meeting of the Iowa Interprofessional Association will be held at Des Moines, January 27, with Mr. L. L. Eisentraut, Des Moines, president. Other speakers will be H. D. Bergman, D.V.M., Ames, on "Interprofessional Relations and Cooperation"; Dr. James P. Leake, Washington, D. C., U. S. Public Health Service, encephalitis, and Adolf Eichhorn, D.V.M., Beltsville, Md., director of animal disease station, Bureau of Animal Industry, encephalomyelitis.

Society News.—Dr. M. Herbert Barker, Chicago, discussed hypertension before the Linn County Medical Society in Cedar Rapids, January 8.—Dr. Lester R. Dragstedt, Chicago, addressed the annual dinner of the Bremer County Medical Society in Waverly, December 8, on "Advances in Treatment of Cancer of the Gastrointestinal Tract."—The Cass County Medical Society was addressed in Atlantic, December 19, by Dr. Harry B. Stokes, Omaha, on bronchoscopy.—Dr. Leon S. McGoogan, Omaha, discussed "Operative Office Gynecology" before the Cerro Gordo County Medical Society, December 9.—The Lee County Medical Society was addressed in Keokuk, December 17, by Drs. William W. Heyerdale on "Present Day Management of Varicosities and Stasis Complications of the Lower Extremities"; Jacob A. Barga, "Regional Enteritis," and Fred Z. Havens, "Malignancies of the Face and Mouth." All are of Rochester, Minn.

KANSAS

Division on Public Health Information.—The Kansas State Board of Health, Topeka, has established a new division on public health information for the extension of lay educational programs pertaining to exhibits, movies, pamphlets, news releases and radio programs on public health. Mr. Roy Oxendale, formerly Topeka representative of the United Press, has been appointed director of the new unit.

Neuropsychiatric Meeting.—The Missouri-Kansas Neuropsychiatric Association met at the Menninger Clinic in Topeka on December 12. The following Topeka speakers participated in a symposium on military neuropsychiatry, which constituted the program:

- Dr. William C. Menninger, The Psychiatrist in Relation to the Examining Boards.
Dr. Henry Harlan Crank, Abbreviated Neuropsychiatric Examination for Use in Selective Service Examinations.
David Rapaport, Ph.D., Detecting the Feebleminded Registrant.
Dr. Robert P. Knight, Recognizing the Psychoneurotic Registrant.
Dr. Carl-Gustaf D. Tillman, Recognizing Schizoid and Preschizophrenic Personalities.
Dr. Edward D. Greenwood, Recognizing the Psychopathic Personality.
Dr. Merton M. Gill, Malingering.
Dr. Ernest Lewy, Neuropsychiatric Casualties and Compensation.
Dr. Robert P. Knight, Psychiatric Problems of the Armed Forces in Training and in Combat.
Dr. Lewis L. Robbins, Civilian Morale in Time of War and Preparation for War.

Dr. Alexander R. MacLean, Rochester, Minn., addressed the banquet in the evening on "Postural Psychoneuroses."

LOUISIANA

Portrait of Professor of Surgery.—A portrait of the late Dr. John Smyth, professor of clinical surgery, Tulane University of Louisiana School of Medicine, New Orleans, was unveiled recently in the Hotel Dieu library, which he established. The picture was the gift of Mrs. Jeanne Sully Smyth, widow of the physician. Dr. Smyth was visiting surgeon at Hotel Dieu for more than thirty years. Dr. Daniel J. Murphy, chairman of the hospital board, presided at the ceremonies; guests included Dr. Rudolph Matas.

MASSACHUSETTS

Personal.—Dr. Russell F. Sullivan, Brookline, visiting surgeon to the Boston City Hospital and specialist in orthopedics, has been appointed professor of orthopedic surgery, Tufts College Medical School, Boston. Dr. Sullivan graduated at Tufts in 1918.

Gift of \$50,000 to Tufts Medical College.—Two gifts totaling \$50,000 to Tufts College Medical School, Boston, have been announced. The Bingham Associates Fund, Bethel, Maine, gave \$25,000, and the trustees of a trust for charitable purposes created by William Bingham 2d of Bethel gave the other \$25,000. The gifts were designated for the building fund of the school and bring the total to \$500,000 in its current campaign for \$750,000, newspapers reported.

Health Center at Radcliffe College.—The new Radcliffe College Health Center, Cambridge, is nearing completion. Newspapers reported on December 28 that it will contain twenty rooms with facilities for laboratories, dispensary for students and including living quarters for two nurses and two maids, accommodations for twelve beds with a potential capacity of twenty, to be used for diagnoses and minor illnesses. Serious cases will be treated in Boston and Cambridge hospitals. The center will be headquarters for the annual physical examinations. Dr. Harriet L. Hardy, Cambridge, is college physician.

MINNESOTA

Chiropractor Sentenced.—Edward F. Jacobson, St. Paul chiropractor, pleaded guilty on December 9 to a charge of performing an illegal abortion and was sentenced to not to exceed four years in the state prison. The defendant offered to surrender his basic science certificate and license to practice chiropractic in the state if the court would suspend the sentence and place him on probation. Albin S. Pearson, judge of the district court of Ramsey County, told the defendant that the court could not show him any leniency because he had a previous conviction of practicing medicine without a license that grew out of a similar case.

MISSOURI

Neuropsychiatric Institute.—The fifth interstate neuropsychiatric institute will be held at State Hospital Number 2, St. Joseph, March 22-April 4, under the sponsorship of the American Psychiatric Association through its committee on psychiatric and medical education and financed in part by a grant from the Rockefeller Foundation. Lectures will be presented on neuroanatomy, neuropathology, psychobiology, psychotherapy, neurooentgenology, neurosurgery and electroencephalography as well as presentations of clinical psychiatric and neurologic problems and related subjects, according to the state medical journal.

NEW YORK

Postgraduate Course.—"The Treatment of Common Diseases" is the theme of a postgraduate course which opened on December 16 for the Schoharie County Medical Society, Cobleskill. The course was arranged by Dr. Clayton W. Greene, Buffalo, under the auspices of the Medical Society of the State of New York. The speakers, all of Buffalo, included:

- Dr. Byron D. Bowen, Management of Diabetes with the Newer Forms of Insulin, December 16.
Dr. Abraham H. Aaron, Treatment of Epigastric Distress Following Meals, December 23.
Dr. Frank N. Potts, Treatment of Low Back Pain, December 30.
Dr. Greene, Treatment of Precordial Pain, January 6.
Dr. Earl D. Osborne, Treatment of Common Skin Lesions, January 13.
Dr. Greene, Use of Sulfanilamide and Drugs of That Group, January 20. This lecture is given under the cooperation of the state department of health with the state society.

New York City

Meeting of Chest Physicians.—The New York state chapter of the American College of Chest Physicians will present the following program at the Hotel Biltmore on January 23:

- Dr. Louis H. Clerf, Philadelphia, Tracheobronchial Tuberculosis.
Dr. Julian Johnson, Philadelphia, Total Pneumectomy.
Dr. Samuel J. Kopetzky, Medical Preparedness.
Dr. Henry K. Taylor, Role of the Radiologist in the Diagnosis of Diseases of the Chest.

Dr. Nelson W. Strohm, Buffalo, is president of the state chapter and Dr. Arthur Q. Penta, Schenectady, secretary-treasurer.

Meeting on Hearing Aids.—An open meeting on hearing aids will be held at the Columbia University College of Physicians and Surgeons, January 19, to discuss deafness and hearing aids. Subjects will include "Physical Considerations in the Design of Hearing Aids," "Problems in Fitting Technic" and "The Marketing of Hearing Aids." Included among the speakers will be Drs. Edmund P. Fowler Jr. and Cornelius E. Hagan Jr. on "The Otolologist's Responsibility in the Fitting of Hearing Aids."

Medical Research Fund.—Lucius N. Littauer has donated nearly \$25,000 in stocks and securities to New York University to establish a medical research fund at the college of medicine, according to the *New York Times*. The money will be used to create the Lucius N. Littauer Fund, the income to be expended "for research in psychiatry, neurology and related fields, in order to increase and diffuse knowledge of the biologic and other factors which influence thought and conduct, and thereby to prevent and correct abnormal human behavior through experimental and clinical approaches." It was also stated that "a fair yet liberal part of the income will be devoted to fellowships for graduate students in medicine of superior ability, to be known as 'Littauer Fellows,' to be trained to practice psychiatry and those branches of medical science concerned with the activities of the mind and the factors influencing it."

Dr. MacInnes Receives Nichols Medal.—The 1942 William H. Nichols Medal of the New York Section of the American Chemical Society has been awarded to Duncan A. MacInnes, Ph.D., since 1926 associate member of the Rockefeller Institute for Medical Research, in recognition of his "outstanding investigations on electrolytes and the development of technics which have immeasurably enriched both the theory and the practice of modern electrochemistry." A statement made by the jury of the award reads in part: "On the basis of these studies the electrode is now a recognized and dependable device which finds wide industrial use. More recently, Dr. MacInnes and his associates at the institute have turned their interest to the motion of biologically important solutions in an electric field, and their experimental investigations in electrophoretic phenomena have greatly increased our knowledge of the protein content of the blood serum." Dr. MacInnes received his Ph.D. at the University of Illinois in 1911.

Record Low Mortality Rate.—A total of 74,553 deaths occurred in the city in 1941, giving a rate of 9.9 per thousand of population, the lowest general mortality rate in the city's history, newspapers reported on January 1. The population was estimated at midyear at 7,521,000. The previous low death rate was 10 in 1938. A new low rate of 30.8 per thousand live births was set for infant mortality, and the maternal mortality rate of 2.2 (247 maternal deaths) per thousand live births is also an all time low rate for the city. The birth rate was 15.2 per thousand of population in 1941. In 1900 the birth rate was 34.5. According to the report, the decrease in deaths from pneumonia in the last ten years has been spectacular and is attributed largely to chemotherapy and serums. In 1941 the mortality rate was 45 per hundred thousand of population against 45.7 in 1940; in 1931 it was 132.2. There were 404 cases of infantile paralysis with eight deaths last year. The last previous epidemic was in 1935, when 2,054 cases and ninety-one deaths were recorded. Typhoid cases totaled 193 with thirteen deaths, which, according to the report, is an "excellent showing" for a city of this size. Twenty-nine of these cases had been imported on refugee ships from Europe. A slight increase in deaths from tuberculosis was noted, 3,365 in 1941 as against 3,323 in 1940, but defense activities were not considered responsible for the rise. Appendicitis deaths totaled 562, giving a rate of 7.5 per hundred thousand of population. This is a new low rate for this disease, but the report states that appendicitis remains a "serious health problem."

OHIO

Changes in Health Officers.—Dr. William E. Sovik has been appointed health officer of Campbell, succeeding Dr. Edward J. Reilly. Dr. Arthur B. Ream, Mechanicsburg, has been appointed health commissioner of Clermont County.

Industrial Physicians' Club.—The Cleveland Industrial Physicians Club was recently formed to exchange views and to study problems in this field, as a result of expanded industrial activities in defense work. Officers are Drs. Rudolph C. Engle, president; Nathaniel M. Jones, vice president, and Richard P. Bell, secretary-treasurer.

Dr. North Retires as Professor.—Dr. Emerson A. North has retired as professor of psychiatry at the University of Cincinnati College of Medicine, effective July 1, 1942. Dr. John Romano, instructor in medicine, Harvard Medical School, Boston, has been named to succeed Dr. North, who is retiring on account of poor health, it is reported. Dr. North has been a member of the Cincinnati faculty since 1923.

OKLAHOMA

Personal.—Dr. Lewis E. Emanuel, Chickasha, was reelected president of the Oklahoma State Hospital Association at the annual meeting in Tulsa, Nov. 14, 1941. —Dr. Lowell L. Stokes, Okmulgee, is to be director of a new health unit in Okmulgee County.

Society News.—The Carter County Medical Society was addressed, November 3, in Ardmore by Dr. Milton J. Serwer and Mr. R. H. Graham, both of Oklahoma City, on "Endocrine Treatment of Abortion" and "The New Reregistration Law and Its Benefits to Both the Medical Profession and the Laity"; Dr. John Hobson Veazey, Ardmore, discussed "Erythroblastosis Fetalis" with report of a case. —Dr. Donald W. Branham, Oklahoma City, addressed the Cleveland County Medical Society, November 13, in Norman on "Injuries of the Urinary Tract." —Dr. Ralph M. Alley, Shawnee, discussed "X-Rays in the Diagnosis of Tuberculosis" before the Pottawatomie County Medical Society, Shawnee, December 20.

PENNSYLVANIA

Society News.—Dr. Theodore O. Elterich, Pittsburgh, discussed "Blood Diseases in Childhood" before the Washington County Medical Society in Washington, January 14. —The Delaware County Medical Society was addressed in Chester, January 8, by Dr. Charles I. Stiteler, Chester, on "Wild Flower Photography in Kodachrome: An Interesting and Educational Hobby."

Philadelphia

Dr. Craig Appointed Director of Chest Clinic.—Dr. Frank A. Craig, assistant professor of clinical medicine at the University of Pennsylvania School of Medicine and the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, has been appointed director of the clinic of the Henry Phipps Institute. According to an announcement, under the new assignment Dr. Craig is responsible for the supervision of the chest clinic of the institute, covering the collapse therapy division of the clinic, the division of public health nursing and the special diagnosis clinic, which has been under his own active direction.

Personal.—Dr. Esmond R. Long, professor of pathology at the University of Pennsylvania School of Medicine and director of the Henry Phipps Institute, recently returned after a three months trip in South and Central America. For two months in Colombia he was consultant to the Junta Construcción of the San Carlos Hospital, a sanatorium-hospital to be built on the outskirts of Bogotá. Dr. Long was also in Panama, Venezuela and Costa Rica under the auspices of the Pan American Sanitary Bureau and the division of cultural relations of the U. S. Department of State and lectured before the National Medical Association of Panama, the Medical Association of the Isthmian Canal Zone, the Academy of Medicine and various groups of tuberculosis specialists in Caracas and the faculty of medicine and tuberculosis specialists in San José. —Dr. Louis H. Clerf has been appointed chairman of the Physicians Group of the United Charities Campaign. The appeal of this group will be centered on physicians in central Philadelphia, West Philadelphia and Germantown.

TEXAS

Courses for Continuation of Medical Study.—The Dallas Southern Clinical Society announces its midwinter courses for the continuation of medical study to be held in Dallas, January 26-28. The facilities of the society, the hospitals and clinics of Dallas and the Baylor University College of Medicine will be available. The courses have been designed for the general practitioner and the specialist; physicians who are members of their county medical societies are eligible to attend. The subjects will cover diseases of the chest and medical and surgical diseases of the gastrointestinal tract. Additional information may be obtained from the Secretary, Dallas Southern Clinical Society, 1133 Medical Arts Building, Dallas.

VIRGINIA

Annual Spring Graduate Course.—The sixteenth annual spring graduate course in ophthalmology and otolaryngology will be given at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, April 6-11. Speakers will include Drs. George E. Shambaugh Jr., Chicago; George M. Coates, Philadelphia; Bennett Y. Alvis, St. Louis; Wendell L. Hughes, Hempstead, N. Y.; Edmund B. Spaeth, Philadelphia, and John R. Richardson, Boston.

WEST VIRGINIA

State Society Announces New Procedure for Annual Meeting.—At a meeting in Bluefield, December 13, the committee on scientific work of the state medical association adopted a new procedure for the program of the seventy-fifth annual session in White Sulphur Springs, July 13-15. All of the section meetings will be abolished, but each section will take over a specified session of the general meeting and conduct a round table presentation of some practical phase of its specialty for the general practitioner. All meetings will be in the nature of round table discussions and the entire program will be designed for the general practitioner. It is believed that the new arrangement will give each section a larger and more important field of service. A national leader in each specialty will be invited to lead the discussion on a specified topic assigned by the program committee, and from two to three section members will be given subtopics to develop following the presentation of the guest essayist. Following this symposium the round table discussion will be conducted.

HAWAII

Emergency Blood Bank.—Newspapers reported on December 24 that between three and four thousand donors had contributed to a blood bank since December 7, the day of the Japanese attack. Plans are under way to accumulate five thousand flasks within two months for use in transfusions.

Dr. Moorhead Honored for Service.—Dr. John J. Moorhead, professor of clinical surgery, New York Post-Graduate Medical School, Columbia University, New York, has been presented with a medal and etching by the Honolulu County Medical Society for his work in helping to care for the wounded following the Japanese attack on Oahu, December 7. Dr. Moorhead was in Honolulu as the guest of the society to deliver a series of twelve lectures when the attack took place. He returned to New York January 8. In a statement to the press, Dr. Moorhead stated that he was on his way to lecture before the Honolulu County Medical Society when he heard the sounds of explosions. "I heard the radio in my car say that the Japanese had attacked, but I went on to the hall and started my lecture," he said. "Then an official of the society came running down the aisle shouting that the Japanese were attacking and that ten surgeons were wanted at the Tripler General Hospital immediately. That was soon after 9 a. m. In twenty minutes I was in the hospital, performing some operations and directing others."

GENERAL

Special Society Election.—Dr. Willis D. Gatch, Indianapolis, was elected president of the Western Surgical Association at its meeting in St. Paul recently. Other officers are Drs. Elmer M. Jones, St. Paul, and E. Eric Larson, Los Angeles, vice presidents; Arthur R. Metz, Chicago, secretary, and Verne C. Hunt, Los Angeles, treasurer. The 1942 meeting will be in Memphis sometime in December.

Time Changed for Defense Health Broadcast.—Announcement is made of the change in time of the round table radio programs known as the National Defense Health Clinics, which are broadcast over the national network of the Mutual Broadcasting System. In the future the time will be 3:45 to 4 p. m. eastern standard time, Sunday afternoons. Mrs. Franklin D. Roosevelt will participate in the program on January 18.

Gallup Survey of Common Colds.—In the one week period ended December 24 a survey by the American Institute of Public Opinion, of which George H. Gallup, Ph.D., Princeton, N. J., is director, found colds reported in one third of American homes, with an estimated total of 18,000,000 persons afflicted, according to the *New York Times*, January 3. More than three million man days of work were lost in war industries or war connected industries from illness during December, and the common cold accounted for half of this lost time, it was stated. In the one week survey, ended December 24, the highest incidence of colds was reported among children under 10 years. Among the 18,000,000 cold sufferers in this period, about one in four was treated by a physician.

Conference on Tomorrow's Children.—At the recent third Southern Conference on Tomorrow's Children in Nashville, approval was given to the organization of a regional committee to coordinate programs and activities in eleven Southeastern states. Membership of the new committee will comprise representatives of the state leagues from Alabama, Arkansas, Florida, Kentucky, North Carolina, South Carolina, Tennessee, Virginia and West Virginia. Georgia and Mississippi, which have no state leagues at the present time, will be represented by selected interested citizens.

Changes in Status of Licensure.—The California State Board of Medical Examiners at a meeting in Sacramento recently took the following action:

Dr. Howard D. Mayers, Fall River Mills, license revoked Oct. 22, 1941, having been charged with habitual intemperance.

Dr. Frederick William Riley, Holy City, license revoked Oct. 23, 1941; charged with aiding and abetting an unlicensed individual, namely William F. Hoque, who operated the Valley Rest Home, Los Gatos, where patients were treated with an escharotic paste in an asserted "cure" of cancer.

Dr. Oscar Charles Long, Brawley, license restored Oct. 21, 1941 and placed on five years' probation without narcotic privileges and ordered to report at each Los Angeles meeting. The license was revoked on March 10, 1938.

Riboflavin Requirement for Enriched Flour Postponed to July 1, 1942.—Federal Security Administrator Paul V. McNutt issued an order, December 3, postponing to July 1, 1942 the effective date of the mandatory riboflavin requirement in the definitions and standards of identity for enriched flour, enriched bromated flour, enriched self-rising flour and enriched farina. All the other provisions of the definitions and standards of identity for these products, published in the *Federal Register* of May 27, 1941, became effective on Jan. 1, 1942. In taking this action Mr. McNutt made the following statement:

A thoroughgoing canvass recently has been made of the present and prospective production of synthetic vitamins, including riboflavin. At the present time the supply of riboflavin, in forms suitable for addition to enriched flour and like products, is not sufficient to permit the production of such foods on a scale which would meet current demands. Riboflavin will become increasingly available in the first half of 1942, and it appears that by July 1 there will be adequate supplies for the enrichment program. In the light of this situation I am postponing to July 1, 1942 the effective date of the mandatory riboflavin requirement in the definitions and standards of identity for enriched flour, enriched bromated flour, enriched self-rising flour and enriched farina.

FOREIGN

Deaths in Other Countries

Dr. Emile de Grósz, emeritus professor of ophthalmology and former dean of the University of Budapest Medical School; honorary fellow of the American College of Surgeons and of the American Academy of Ophthalmology and Otolaryngology; ex-president of the International Organization of the Campaign against Trachoma, died in Budapest, aged 76.—**Dr. Emile-Jean Moure**, clinical professor of otorhinolaryngology, faculty of medicine of Bordeaux University; in 1904 president of the International Congress of Otolaryngology at Bordeaux; founder and for a time editor of *Weekly Review of Otolaryngology, Rhinology and Laryngology*, died at Cannes on the Riviera, aged 86.

CORRECTION

The Kenny Method.—In the editorial in *THE JOURNAL*, December 6, a statement was made which indicated that massage was a part of the Kenny technic. Sister Kenny writes to the effect that, according to her concept, the cardinal symptoms of infantile paralysis are "muscle spasm, muscle incoordination and muscle alienation," and that massage does not have any part in her procedure. She states also that "The muscles affected are in spasm, and massage would be damaging as it shortens the muscles affected. Free movement is now allowed until this condition has been rectified and coordination restored. All early movements are carefully guided and controlled by the technician." *THE JOURNAL* expects to publish in the near future an outline of the technic.

Government Services

New Unit of Gerontology

Nathan W. Shock, Ph.D., assistant professor of physiology, Institute of Child Welfare, University of California, Berkeley, has been appointed senior psychophysicologist in the National Institute of Health of the U. S. Public Health Service, Washington, D. C. According to *Science*, Dr. Shock is to be in charge of the experimental program of the unit on gerontology of the institute, which has established a laboratory in the Baltimore City Hospitals.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 29, 1941.

Satisfactory Report on the Public Health

In the House of Commons Dr. Howitt opened a debate on the health of the people. It was feared that there would be a tremendous number of cases of neurosis from bombing, but such cases have been few. The minister of health, Mr. Ernest Brown, said that, considering the disturbances in life which had taken place, the health of the nation had been surprisingly good. It was bad psychology to be always discussing epidemics except as this led to remedial action. We wanted to make as widespread as possible the services which made for the health of the nation and everywhere to keep the people fighting fit. Much was being done in this field. In the areas to which children have been removed from towns because of the risk of bombing we were providing scores of new sick bays to deal with scabies and impetigo. In regard to the general health, the general death rate was 14.3 per thousand, but that figure was not comparable with the figures of recent years, as non-civilians had been excluded since the outbreak of war. The figure for 1939 was 12.1. The infantile mortality in 1940 was lower than the rate for any year previous to 1938. The maternal mortality rate declined to a new record of 2.61 per thousand labors, against 2.92 in 1939. The conditions of public health remained generally satisfactory. Early in 1940 there was an increase of cerebrospinal fever, but its recurrence had been less noticeable in the early part of this year. The minister of health said he would not cease to look for opportunities in war to find additional services which, when the war was won, would continue the great improvements in progress when it began. He hoped to give in a few weeks a much fuller report on the public health.

INCREASE OF TUBERCULOSIS

A previous minister of health, Mr. Macdonald, claimed that the public health was so good that it showed improvement under war conditions. One exception has to be made, but it is not important. There has been some increase in tuberculosis. In the House of Commons the minister of health stated that on the basis of provisional mortality figures for the years 1939 and 1940 the rate for pulmonary tuberculosis in England and Wales for the population as a whole was 9.7 per cent higher in the latter than in the former years, the highest rate of increase being 15 per cent in females between the ages of 15 and 25 years. In the first quarter of 1941 there was, however, a reduction of 7 per cent for the population as a whole and of 4 per cent for women between the ages of 15 and 25.

This special increase of tuberculosis in young females has led to some comment. In a letter to the *Times* Sir Ernest Graham-Little (dermatologist and member of parliament) states that the total deaths from tuberculosis in females of the ages of 15 to 25 years in 1938, the last prewar year, was 1,761, as against 2,073 in 1940, the latest year for which records exist. The same selective mortality was observed in the last war. Graham-Little states that, although much research was devoted to its explanation, the problem remains unsolved. He says that mortality from tuberculosis is generally accepted as an index to the level of nutrition and submits that one factor in this difference of incidence between men and women may lie in their different dietetic habits. More than one speaker in the debate in the House of Commons pointed out that too many young women are accustomed to make their midday meal of "tea and buns." The latter are made from white flour, which is of negligible nutritive value, consisting almost wholly of starch and stripped of all vitamin content.

Inefficient Steam Sterilization

A case of the rare condition puerperal tetanus was recorded by Maclean and Challen in the *British Medical Journal* (2:302 [Aug. 30] 1941). The symptoms began ten days after forceps delivery and suture of the perineum with the silkworm gut. Though a direct smear and culture of vaginal smear was negative for tetanus bacilli, it was concluded that infection took place through the lacerated vaginal tissues. The patient was admitted to the hospital fifteen days after delivery, and no knowledge regarding the asepsis of the obstetric procedure was obtainable. A foul sanguineous vaginal discharge, which appeared on the second day after admission, was considered strong evidence of the site of infection. This case is referred to in an editorial entitled "Inefficient Steam Sterilization" (*ibid.* 2:445 [Sept. 27] 1941). It is pointed out that Pulvertaft (*ibid.* 1:441 [Feb. 27] 1937) was able to attribute a case of tetanus after hysterectomy to infection from an unsterilized vaginal pad. This led to the appointment by the Royal College of Obstetricians and Gynecologists of a committee to investigate the possible transmission of anaerobic infections by surgical dressings, with special reference to vaginal pads as a source of tetanus. This committee found that brown cotton wool undergoes no chemical treatment and therefore contains bacteria from the soil in which it was grown. White cotton wool is bleached by boiling in alkali and subsequent treatment with chlorine, which sterilizes it, but after washing in water—a treatment which at the factory investigated loaded it with cocci, owing to the multiplication of these organisms in a softening plant—it is dried in a current of hot air. The blower fans in the premises examined were close to the floor in such a situation as to suck up dust. Cotton wool of course is an excellent filter for particulate matter in air. Sporogenous bacteria were in fact cultivated from all samples examined and the bacillus of tetanus from one. To filter air used for drying or to sterilize the material in bulk in the factory may or may not be possible. If not, cotton wool requires efficient steam sterilization before surgical use. The use of the autoclave in hospitals was found open to criticism. Some of those responsible did not know that overtight packing can prevent adequate penetration by steam, and the technic was unreliable in other ways. The committee recommended loose packing of drums, evacuation to a negative pressure of 20 to 25 inches of mercury, a steam pressure of 20 pounds for twenty minutes and a monthly bacteriologic test with spore bearing anaerobes.

Radium Therapy During the War

The bombing of cities has seriously interfered with radium therapy. The destruction of a radium containing apparatus would be not only a serious loss but a great danger. The scattering of the radium salt might render the locality dangerous for a long time if the salt could not be recovered. Since the outbreak of the war the radium stocks of the London hospitals have been buried in a specially constructed borehole extending to 50 feet below ground. A steel tube 70 feet long extends from outside the telerradium treatment room on the second floor and is sunk in concrete. The radium is kept in a special casket which can be rapidly raised or lowered by a steel hawser operated by a winch and a series of pulleys.

At the Royal Cancer Hospital, London, the use of radium in the form of surface or intravaginal applicators was abandoned temporarily in September 1940 owing to the continuous air attacks, but treatment by telerradium was not interrupted. Treatment of cancer of the skin and uterus was resumed in October, but the use of intrauterine and intravaginal applicators had the difficulty that removal whenever an air raid warning was sounded could not be done in less than two minutes, during which a large quantity of radium would be exposed to danger. To meet this difficulty not more than 90 mg. of radium

was ever left in use during an air raid, and the patient was kept in the safest part of the hospital—the ground floor of a five story ferroconcrete building. The war certainly has had a detrimental effect on radium treatment. Surgery or roentgen treatment had to supplant it to some extent and not with advantage. Also the migration of patients in consequence of air raids, the life in shelters led by many and the bombing of hospitals interfered with their attending hospitals. Also the encouraging increase of cases seen in the early stage received a setback.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 15, 1941.

Congress of Surgeons of Argentina

The thirteenth Argentine Congress of Surgery was held in Buenos Aires, October 5 to 10. Delegations from Brazil, Chile, Bolivia, Uruguay and Paraguay participated. The chairman, Dr. Arnaldo Caviglia, called attention to the dangers involved in the inadequate surgical training of rural physicians and demanded better training of students.

The first paper, on relapse of umbilical hernias, was given by Dr. Germán Taubenschlag. He designated the constitutional weakness of the wall as the cause of the recurrences. On the basis of embryologic studies and investigations on the physiologic functions of the abdominal muscles, he defended the point of view of the congenital origin of these hernias. Women with this type of hernia require surgical treatment; if they are obese, preliminary reducing treatment should be employed in order to avoid recurrences. In some cases a lipectomy is necessary as a preparatory operation. The speaker recommended transverse elliptic incisions and rejected those which conserve the umbilicus, except in cases in which the hernia is extremely small. Cotton thread is particularly recommended as suture material; it is the best nonresorbable material and causes the least inflammatory reactions. Drainage is to be avoided, even in case of extensive incision. After the operation an adequate rest period is necessary. The patient's constitution, constipation, births and premature getting up are the most important causes of recurrence.

The second paper, on recurrence of inguinal and crural hernias, was presented by Dr. Carlos I. Allende. He designated congenital and constitutional factors as the chief causes of relapse and then evaluated the anatomic and surgical conditions and the operations.

The subject of subphrenic abscesses was reviewed by Dr. Oscar Cames of Rosario. As regards treatment, he recommends the extraperitoneal, particularly the retroperitoneal, approach. He discussed prophylaxis of the abscess, giving attention to disorders that may cause it, that is, appendicitis and gastroduodenal perforation as well as hepatobiliary disorders. It is surprising how rarely these abscesses result from the perforation of a hepatic cyst or an amebic abscess. Diagnostic puncture is not without danger; it can be risked only in special cases and as part of the operation. The prognosis depends largely on early diagnosis. The dangers increase considerably if complications exist.

The paper on the last official subject, traumatic injuries of the menisci and the crucial and lateral ligaments of the patella, was presented by Dr. José Valls.

The final resolutions of the congress stressed the importance of special training in surgery with a corresponding certificate. This is considered indispensable also for the uniform regulation of the hospital career of surgeons.

The subjects planned for the next annual congress are non-traumatic compressions of the spinal cord, injuries of the thorax and acute pancreatitis.

Chilean Congress of Pediatrics

The Chilean Congress of Pediatrics, recently held in Valparaiso, recommended among other things that the Instituto Internacional Americano de Protección a la Infancia should make inquiries regarding nutrition in the different South American countries and suggest ways and means for the exchange of basic foodstuffs. Furthermore, in view of the general political conditions it is suggested to call a Congreso latinoamericano de medicina infantil, which is to meet in Buenos Aires.

The first paper, by Professor Scroggie, was on deficiency symptoms during childhood. These are relatively frequent in Chile. The symptoms are multiform, several of them characteristic for Chile. Pellagra is rarely observed; more frequent are protein, fat and vitamin hunger. Edemas, hyperkeratosis, atrophic skin, hypermelanosis and others are observed. Scroggie described a so-called scratch symptom observed by him: when the nail is drawn over the skin lightly and without pressure, a white line appears, which disappears again after three to twelve hours, whereas normally it should disappear in from fifteen to twenty minutes. At the end of twenty-four hours a crust or a crustlike line, interrupted by parts of normal skin, appears in place of the white line. This sign is caused by the hyperkeratosis, the atrophy of the epidermis and the infiltration of the corium. Many of these children have symptoms of sprue and of gastrointestinal infantilism such as distended abdomen, dolichocolon, dyskinesia of the intestine, profuse foamy stools of grayish white or brownish appearance with large quantities of fatty acids or soaps. In the treatment, blood transfusions or plasma infusions are of decisive effect. Proteins, carbohydrates and vitamins should be given.

Later the congress directed its attention to the problem of the care of prematurely born infants on the basis of 258 who were cared for in the Casa Nacional del Niño from 1931 to 1939. Premature births are caused by social and environmental factors. In the cases examined, causes prevailed which could have been avoided, such as tuberculosis and syphilis in the mother. One fourth of the prematurely born infants showed signs of nonviability; their mortality was one third. Of 130 prematurely born infants that were observed for eight months, 80 per cent had rickets. In the anemia of the prematurely born, the customary therapeutic measures are of no avail. Favorable, rapid and permanent results are obtained with blood transfusions. The total mortality reached 41.4 per cent; by improved care it could be reduced to 20 per cent in 1939. The chief causes of death were intercurrent infections, tuberculosis and syphilis; then followed debility and cerebral and umbilical hemorrhages. During the first two or three months only breast milk was given; however, it should be remembered that there are individual differences in the food requirements.

The third subject was empyema in children. It is most frequent in boys and occurs chiefly during winter; the right half of the thorax is mainly involved. The mortality is greatest in children below 2 years of age.

Marriages

CHARLES E. SAX, Bloomfield, N. J., to Miss Harriet L. Horovitz of Savannah, Ga., in Charleston, S. C., Aug. 28, 1941.

ISADORE JACQUES YETWIN, Waltham, Mass., to Miss Ruth Horowitz of Elizabeth, N. J., in Brooklyn, Dec. 21, 1941.

ALBERT E. ABRAHAM, Arlington, N. J., to Miss Henrietta T. Abrahams of East Orange, N. J., June 22, 1941.

ROBERT BOYD STITH JR., Florence, S. C., to Miss Finley Plunkett of Aiken in December 1941.

CLARENCE VERNARD HODGES, Chicago, to Miss Nelle Mae McAfee of Flossmore, Ill., recently.

BRUNO RIEMER, Romulus, N. Y., to Miss Katharine Kochler of New Rochelle, Aug. 22, 1941.

Deaths

Robert Coalter Bryan, Richmond, Va.; Columbia University College of Physicians and Surgeons, New York, 1899; since 1932 emeritus professor of genitourinary surgery at the Medical College of Virginia; member of the Medical Society of Virginia and of the Southern Surgical Association; past president of the American Association of Genito-Urinary Surgeons; fellow of the American College of Surgeons; served in the regular army during the World War and as a member of the American Red Cross Commission to Rumania; surgeon, Stuart Circle Hospital; member of the House of Delegates of the American Medical Association in 1919; visiting surgeon, Memorial Hospital; at one time one of the owners and chief surgeon at the Grace Hospital; aged 68; died, Dec. 24, 1941.

Charles Clagett Marbury • Washington, D. C.; Georgetown University School of Medicine, Washington, 1893; professor of clinical medicine emeritus at his alma mater since 1925, and from 1904 to 1925 professor of clinical medicine; fellow of the American College of Physicians; veteran of the Spanish-American and World wars; attending physician, Providence Hospital, from 1898 to 1931, chief of staff from 1920 to 1931 and since 1931 member of the consulting staff; since 1928 member of the consulting staff of the Central Dispensary and Emergency Hospital; member of the board of visitors and governors of St. John's College, Annapolis, Md., from Nov. 10, 1924, to March 8, 1938; aged 71; died, Dec. 10, 1941, of coronary thrombosis.

Francis Proctor Field • Surgeon Lieutenant Commander, United States Navy, retired, Parris Island, S. C.; Long Island College Hospital, Brooklyn, 1903; veteran of the Spanish-American War; appointed an assistant surgeon in the naval reserve force in 1917 and was commissioned as a lieutenant in the medical corps of the navy on Aug. 3, 1920; was promoted to the rank of lieutenant commander on June 30, 1931; placed on the retired list Sept. 1, 1940, but remained on active duty at the Marine Barracks; held the Nicaraguan Campaign Medal, the World War Medal and the Spanish-American War Medal for his service in the army; aged 65; died, Dec. 7, 1941, in the United States Naval Hospital of coronary thrombosis.

Loren Bascom Taber Johnson • Washington, D. C.; Georgetown University School of Medicine, Washington, 1900; formerly associate professor of psychopediatrics at his alma mater; veteran of the Spanish-American and World wars; at one time member of the District of Columbia Commission on Mental Health; member of the American Psychiatric Association; past president of the Clinico Pathological Society of Washington and the Washington Nervous and Mental Disease Association; president of the Washington Institute of Mental Hygiene; on the staffs of the Children's Hospital and the Garfield Hospital; aged 66; died, Dec. 14, 1941, in the Emergency Hospital of carcinoma of the stomach.

Lyman Luther Daines, Salt Lake City; Rush Medical College, Chicago, 1931; member of the Utah State Medical Association; dean and professor of bacteriology and pathology at the University of Utah School of Medicine; formerly served as assistant in bacteriology and pathology at the University of Illinois College of Medicine, Chicago; was a special expert for the U. S. Public Health Service; carried on investigations in leprosy and tuberculosis; past president of the Utah Academy of Sciences and the Utah State Public Health Association; formerly member of the city board of health; pathologist, Latter-Day Saints Hospital and the Holy Cross Hospital; aged 58; died, Dec. 12, 1941, of coronary occlusion.

Charles Bradford Sylvester • Portland, Maine; Medical School of Maine, Portland, 1889; past president of the Maine Medical Association, Oxford County Medical Society and the Cumberland County Medical Society; was chairman of the tuberculosis division and past president of the Maine Public Health Association; formerly a member of the board of directors of the National Tuberculosis Association; fellow of the American College of Physicians; served during the World War; was a captain, a major and lieutenant colonel in the United States Army Medical Reserve, retired in 1927; for many years consultant, Maine General Hospital; aged 76; died, Dec. 18, 1941.

Emil Theodor Mueller • North Tonawanda, N. Y.; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1906; member of the American Society of Clinical Pathologists;

medical missionary in Africa from 1909 to 1914; assistant pathologist, New York State Institute for the Study of Malignant Diseases, Buffalo, from 1915 to 1923; pathologist, J. N. Adam Memorial Hospital, Perrysburg, 1923-1924; aged 61; since 1924 pathologist, and past president of the staff of the Deaconess Hospital, where he died, Dec. 17, 1941, of coronary occlusion.

James Joseph Duffy • New York; Harvard Medical School, Boston, 1919; assistant professor of radiology at Cornell University Medical College; member of the American Radium Society; fellow of the American College of Surgeons; associate attending surgeon, Memorial Hospital for the Treatment of Cancer and Allied Diseases; consultant, New York Infirmary for Women and Children, New York, St. John's Long Island City Hospital, Long Island City, and St. Agnes Hospital, White Plains; aged 49; died, Dec. 14, 1941.

Edward Francis Dean, Denver; University of Denver Medical Department, 1897; member of the Colorado State Medical Society; served during the World War; formerly associate professor of clinical surgery at the University of Colorado School of Medicine; fellow of the American College of Surgeons; past president of the Denver County Medical Society; surgeon, St. Luke's, Mercy and Denver General hospitals; aged 67; died, Dec. 4, 1941, of uremia and prostatic obstruction.

Walter Dean Murfin, Decatur, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; member of the Illinois State Medical Society; past president and secretary of the Macon County Medical Society; served during the World War; aged 54; died, Dec. 10, 1941, in St. Mary's Hospital.

Francis Henry Mosse, Tsinan, Shantung, China; L.R.C.P., London, England, M.R.C.S., of England, 1913, and M.R.C.P., of London, England, 1918; representative of the Church of England in the Union work at Cheeloo University; aged 56; died, Dec. 6, 1941, in St. Mary's Hospital, Minneapolis, of pulmonary tuberculosis.

Kenneth Rush Bell, Sanford, Fla.; Emory University School of Medicine, Atlanta, Ga., 1928; member of the Florida Medical Association and the Southeastern Surgical Congress; at one time instructor in gross anatomy and assistant in surgery at his alma mater; aged 39; captain, medical reserve corps, United States Army, stationed at Camp Claiborne, La., where he died, Dec. 4, 1941.

Albert Letherland • Harrisville, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1909; formerly county coroner; on the staff of the Lewis County General Hospital, Lowville, and the House of the Good Samaritan, Watertown; aged 61; died in December 1941 of coronary thrombosis.

Walter J. Kurtz, Howard, Pa.; Medico-Chirurgical College of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; bank president, member of the county board of health, and school director; aged 65; died, Dec. 2, 1941, of pituitary tumor and myocardial degeneration.

George Arthur Craigin, Swampscott, Mass.; Harvard Medical School, Boston, 1890; member of the Massachusetts Medical Society; clinical instructor in pediatrics at his alma mater from 1903 to 1908; aged 77; died, Oct. 24, 1941, in the New England Baptist Hospital, Boston, of bronchopneumonia.

Lemuel Ira Gist, Coldwater, Mich.; Eclectic Medical College, Cincinnati, 1927; member of the Michigan State Medical Society; veteran of the World War; county coroner; aged 46; died, Dec. 14, 1941, in the Community Health Center of burns received when a boiler exploded in his office.

Mindaugis Vincent Mikolainis, Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1933; member of the Connecticut State Medical Society; attending anesthetist on the staff of St. Francis Hospital; aged 30; died, Nov. 30, 1941, of acute leukemia.

James Percival Morrill • Paterson, N. J.; Yale University School of Medicine, New Haven, Conn., 1901; fellow of the American College of Surgeons; on the staff of St. Joseph's Hospital; aged 65; died, Dec. 14, 1941, of bronchopneumonia following bilateral ureteral obstruction.

William H. Thomas Hamill, Phillipsdale, R. I.; University of Vermont College of Medicine, Burlington, 1899; for many years health officer of the township of East Providence and formerly member of the school committee; aged 68; died, Dec. 3, 1941, of coronary thrombosis.

William A. Curtin, Syracuse, N. Y.; Syracuse University College of Medicine, 1887; member of the Medical Society of the State of New York; professor emeritus of clinical medicine at his alma mater; consulting physician, St. Joseph's Hospital; aged 79; died, Dec. 5, 1941.

Robert Maxwell Franklin ♂ White Plains, N. Y.; University of Tennessee College of Medicine, Memphis, 1925; was on the attending staff in tuberculosis and chest diseases at the Grasslands Hospital, Valhalla; aged 40; died, Dec. 5, 1941, in the Doctors Hospital, New York.

James Francis Dougherty, Richmond Hill, N. Y.; Bellevue Hospital Medical College, New York, 1897; served during the World War; at one time on the staffs of the Mary Immaculate Hospital, Jamaica, and St. Catherine's Hospital, Brooklyn; aged 67; died, Dec. 5, 1941, of chronic myocarditis and nephritis.

James William Morris ♂ Safford, Ariz.; Memphis (Tenn.) Hospital Medical College, 1894; past president and secretary of the Graham County Medical Society; aged 75; attending physician to the Morris-Squibb Hospital, where he died, Dec. 18, 1941.

Samuel Taylor Barton, Canastota, N. Y.; Kentucky School of Medicine, Louisville, 1893; member of the Medical Society of the State of New York; aged 78; died, Dec. 17, 1941, in the Canastota Memorial Hospital of uremia and diabetes mellitus.

Joseph Everett Nobles ♂ Greenville, N. C.; Jefferson Medical College of Philadelphia, 1899; past president of the Pitt County Medical Society; for many years physician for the East Carolina Teachers College; aged 66; died, Dec. 13, 1941.

George M. Case ♂ Elmira, N. Y.; Jefferson Medical College of Philadelphia, 1884; consultant at the Arnot-Ogden Memorial Hospital, St. Joseph's Hospital and the Elmira Reformatory; aged 80; died, Dec. 13, 1941, in Oakland, Calif.

Leander Hugh Conley, Gas City, Ind.; University of Wooster Medical Department, Cleveland, 1883; member of the Indiana State Medical Association; formerly mayor and member of the school board; aged 84; died, Dec. 8, 1941.

Le Roy Downey Howard ♂ Fairmont, W. Va.; Jefferson Medical College of Philadelphia, 1906; fellow of the American College of Surgeons; on the staff of the Cook Hospital; aged 59; died, Dec. 3, 1941, of coronary thrombosis.

Walter Albert Johnson, Antioch, Calif.; Stanford University School of Medicine, San Francisco, 1932; member of the California Medical Association; aged 35; died, Dec. 9, 1941, in the California Sanatorium, Belmont.

Edgar Woods Jr., Williamsburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1885; at one time a medical missionary in China; aged 82; died, Nov. 5, 1941, of cardiovascular renal disease.

Paul Milton Huddleston ♂ Huntington, W. Va.; Tulane University of Louisiana School of Medicine, New Orleans, 1936; director of the county school health program; aged 31; died, Dec. 7, 1941, of pneumonia.

George Bernard O'Connell, Lewiston, Maine; University of Vermont College of Medicine, Burlington, 1904; member of the Maine Medical Association; aged 63; died, Dec. 1, 1941, in St. Mary's General Hospital.

William Grady Smith, Wendell, N. C.; Medical College of Virginia, Richmond, 1925; member of the Medical Society of the State of North Carolina; aged 43; died, Dec. 11, 1941, in the Rex Hospital, Raleigh.

Harris Ainsworth Jacobson, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; physician for the draft board; aged 54; died, Dec. 22, 1941.

J. Park Neal, Kansas City, Mo.; University Medical College of Kansas City, 1907; member of the Missouri State Medical Association; on the staff of St. Joseph Hospital; aged 67; died in December 1941.

Arthur Francis Manning, Waltham, Mass.; Harvard Medical School, Boston, 1928; member of the Massachusetts Medical Society; on the staff of the Waltham Hospital; aged 39; died, Dec. 12, 1941.

Gilbert M. La Salle, Wabash, Ind.; Hahnemann Medical College and Hospital, Chicago, 1895; member of the Indiana State Medical Association; aged 71; died, Dec. 11, 1941, of cerebral hemorrhage.

Thomas J. Edge, Graham, Ky.; Louisville and Hospital Medical College, 1908; member of the Kentucky State Medical Association; aged 60; died, Dec. 10, 1941, in Louisville of coronary occlusion.

Walter English Baker, Arden, N. C.; Chattanooga (Tenn.) Medical College, 1908; member of the Medical Society of the State of North Carolina; formerly county coroner; aged 67; died, Dec. 7, 1941.

Charles Francis McClure, Berlin Heights, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1899; aged 69; died, Dec. 8, 1941, in the Cleveland Clinic Hospital.

David Frazer Gurd, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, Que., Canada, 1879; L.R.C.P., London, England, 1879; aged 90; died, Dec. 7, 1941.

Isaac W. Davenport, Sheridan, Ind.; Medical College of Indiana, Indianapolis, 1881; member of the Indiana State Medical Association; aged 83; died, Dec. 4, 1941.

James William Robinson, Winslow, Wash.; State University of Iowa College of Medicine, Iowa City, 1897; aged 75; died, Nov. 17, 1941, of arteriosclerosis.

Rowland McNair Lancaster, Rural Hall, N. C.; North Carolina Medical College, Charlotte, 1914; served during the World War; aged 55; died, Dec. 4, 1941.

John Crawford Burkhalter, Titus, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; aged 72; died, Dec. 11, 1941, of coronary occlusion.

Edward H. Brandt, Warrenton, Mo.; St. Louis Medical College, 1888; aged 75; died, Dec. 11, 1941, in the Barnes Hospital, St. Louis, of cerebral embolism.

Osip Raphael Lourie ♂ Boston; University of St. Vladimir Faculty of Medicine, Kiev, Russia, 1896; aged 68; died, Oct. 27, 1941, of coronary thrombosis.

Archibald H. Crouch, Forbus, Tenn. (licensed in Tennessee in 1909); member of the Tennessee State Medical Association; aged 69; died, Dec. 1, 1941.

John Owen Campbell, Lebanon, Tenn.; Vanderbilt University School of Medicine, Nashville, 1878; aged 85; died, Dec. 5, 1941, of heart disease.

Walter Francis Feely ♂ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1928; aged 38; died, Dec. 3, 1941.

Henry Flowers, Brookhaven, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1891; aged 82; died, Dec. 7, 1941.

Lewis Joel Isaacs ♂ Chicago; College of Physicians and Surgeons of Chicago, 1894; aged 68; died, Dec. 14, 1941, of heart disease.

Anthony Hector Desloges, Montreal, Que., Canada; Laval University Faculty of Medicine, Quebec, 1897; aged 67; died, Dec. 3, 1941.

William Thomas Middlebrooks, Panama City, Fla.; Medical College of Alabama, Mobile, 1886; aged 78; died, Dec. 4, 1941.

John Francis Sullivan, San Francisco; University of California Medical Department, San Francisco, 1900; aged 66; died, Dec. 4, 1941.

Samuel Hirsch ♂ La Salle, Ill.; Jenner Medical College, Chicago, 1898; aged 78; died, Dec. 14, 1941, in St. Mary's Hospital.

Peter Price Denton, Daytona Beach, Fla.; Medico-Chirurgical College of Philadelphia, 1904; aged 75; died, Dec. 6, 1941.

Herschel G. Pugh, Armstrongs Mills, Ohio; Starling Medical College, Columbus, 1900; aged 76; died, Dec. 2, 1941.

Alexander Marion Moore, Athens, Ga.; Leonard Medical School, Raleigh, N. C., 1913; aged 56; died in December 1941.

Louise Josephine Pitcher, Half Moon Bay, Calif.; Cooper Medical College, San Francisco, 1903; died, Nov. 2, 1941.

Alexander Dawson, Atlanta, Ga.; Southern Medical College, Atlanta, 1891; aged 76; died, Dec. 2, 1941.

Clinton Orlando Fuller, Paradise, Calif.; Milwaukee Medical College, 1901; aged 68; died, Dec. 5, 1941.

John R. Keathley, Griffithville, Ark. (licensed in Arkansas in 1903); aged 77; died, Dec. 7, 1941.

Bureau of Investigation

CEASE AND DESIST ORDERS

Abstracts of Certain Federal Trade Commission Releases

The work of the Federal Trade Commission, in helping to protect the public against misrepresentation or fraud in the medical as well as other fields, has been greatly extended by the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act. The Food, Drug and Cosmetic Act of 1938 added to the Food and Drug Administration's control of the advertising claims and statements made on the labels of medicines or on the carton or in the accompanying leaflet, whereas what might be termed collateral advertising, that which appears in circulars, newspapers and magazines and over the air, comes more actively under the purview of the Federal Trade Commission, by virtue of the Wheeler-Lea Amendment.

THE JOURNAL has at various times commented on the activities of the Federal Trade Commission in this connection, even before the Wheeler-Lea Amendment gave it its added rights. In some cases the Commission may accept from the person or concern involved a stipulation that the objectionable practices or claims cited will be discontinued. In other cases the Commission issues what is known as a Cease and Desist Order, in which the individual, manufacturer or distributor cited is ordered to cease and desist from practices which have been declared objectionable. In some cases the claims cited have been discontinued by the firms several months (or even longer) before the issuance of the order. Abstracts of some of the orders issued in 1941 follow.

Anti-Drink—Charging that this is not a cure remedy or competent treatment for alcoholism or the liquor habit and that its use will not eradicate the desire for alcoholic stimulants and that it is not harmless but may result in inflammation of the stomach and intestinal tract and disturbances of the heart and nervous system, the Federal Trade Commission in March 1941 ordered that these misrepresentations be discontinued in the advertising. The defendants in the case were Victoria Chemical Company, Schwarz Druggists, Inc., and Schwarz Drug Stores, Inc., all of Newark, N. J., Schwarz Drug Company, Bloomfield, N. J., Hiram Schwarz, Inc., White Plains, N. Y., and a number of Schwarz's, with an Oscar Katz and a Jacob Eisen, all officers of these firms.

Ardanol, Chloro-Zol and Germ-I-Tabs—These were put out by the American Drug and Chemical Company, Minneapolis, which was ordered in March 1941 by the Federal Trade Commission to desist from advertising. That "Ardanol" is a cure or remedy for sterility in either sex, or will restore or beneficially affect fertility, or possesses any value as a preventive of abortion, that "Chloro-Zol" and "Germ-I-Tabs" have any value in feminine hygiene other than as douches, or that Chloro-Zol is a competent treatment for bromidrosis, tetter, Cuban itch and other cutaneous disorders. Incidentally, back in 1931 the label of Chloro-Zol was declared to bear fraudulent claims in violation of the Pure Food and Drugs Act.

BQR (Beeman's Quick Relief)—The Federal Trade Commission found that this is a laxative with mild analgesic properties and has no curative action on the underlying factors that cause colds. Accordingly, in March 1941 it ordered Beeman's Laboratory, Inc., Atlanta, Ga., and two of its officers and a director to cease representing that the product is a cure or remedy for colds or will prevent these or cold infections, or that it will have any effect on colds in excess of what a laxative and mild analgesic will do. Back in July 1937 this company had signed a stipulation with the Commission, promising to discontinue misrepresentations for BOR as an alleged cure for colds, coughs, asthma and influenza.

Breatheasy—The Pascal Company, Inc., of Seattle was ordered by the Federal Trade Commission in April 1941 to cease representing this product as a cure, remedy or competent treatment for chronic bronchitis, asthma or hives and other cutaneous disorders, heart trouble, gastric ulcers, neuritis, neuritis or inflammations in the head, throat and lungs. The concern was also forbidden to run advertisements that fail to reveal that the stuff cannot be safely used by persons having high blood pressure, toxic goiter, diabetes or heart trouble. A somewhat similar order was issued by the Commission against the Pascal concern in September 1937.

Certane Products—These preparations, put out by Rosemarie Lewis, trading as the Certane Company, Los Angeles, consisted of an ointment, a jelly, an antiseptic powder, a douche powder and cones, all sold for feminine hygiene, in connection with appliances known as "Douche Shields," "Applicators," "Di Caps" and "Dia Domes." The advertising represented that if used as directed these products would constitute safe and effective preventives against conception and pregnancy and that they prevent disease and consist in whole or in part of ingredients effective in preserving health and youth to wives and mothers. The Federal Trade Commission found that the preparations and appliances would not accomplish these results and that, in fact, serious injury might result from the use of the Douche Shields under certain conditions. In March 1941 the Commission ordered Mrs. Lewis to discontinue the misrepresentations.

Claro Hair Remover—The Claro Laboratories, Inc., South Bend, Ind., was ordered by the Federal Trade Commission in March 1941 to cease representing that this product constitutes a safe or nonirritating means of removing superfluous hair or will permanently remove such hair or retard its growth. The Commission found that because of the barium sulfide and potassium hydroxide in the product its use would dissolve only that part of the hair above the skin and would not affect the root or retard hair growth, that it is not safe or nonirritating and in fact, is likely to cause severe dermatitis and chemical burns.

Corn-Go and Liquid Corn-Go—In January 1941 Frank Spors, trading as Spors Company and as Quality Products Company, Le Center, Minn., was ordered by the Federal Trade Commission to discontinue advertisements representing that these products will remove bunions prevent recurrence of corns or calluses or have any other effect on them than temporary removal.

D D D Prescription—This has for years been put out as an alleged remedy for eczema by the D D D Corporation, Batavia, Ill. In May 1941 the Federal Trade Commission ordered the concern to cease representing in its advertisements that the product is a cure or remedy for eczema, pimples or hives or has any value in treating these ailments or cutaneous disorders caused by internal or systemic conditions in excess of affording temporary relief from the symptoms of itching, that it has any effect on cutaneous blotches or rashes when due to systemic or constitutional conditions, or athlete's foot, insect bites or ivy and oak poisoning beyond offering temporary alleviation.

Dr. Blanchard's Regulator—This product, also known as "Dr. Blanchard's Female Compound and Regulator" and "Dr. Jane Blanchard's Compound Regulator," is put out by one Jane Blanchard Gery, trading as Dr. Jane Blanchard, Pittsburgh. In April 1941 Jane Blanchard Gery was ordered by the Federal Trade Commission to discontinue advertisements which represent that her nostrum is a competent regulator of conditions peculiar to women, possesses any value in the treatment of menstrual disorders or is a tonic or a blood purifier or is harmless. She also was ordered to run no advertisements that fail to reveal that her "Regulator" may cause colitis or other serious consequences.

Ethel Bellamy Eyelash Luxuriant—This was the subject of an order issued by the Federal Trade Commission in May 1941 against Ethel Bellamy, Inc., Nutley, N. J., to cease representing that this preparation has any therapeutic value in the treatment of granulated eyelids, that it promotes eyelash growth, supplies pigment to the eyelashes or darkens them permanently or in any way affects eyelash color, except temporarily through its dyeing properties.

Gland Estemeter—This device is put out by the Gland Estemeter Corporation of Chicago which has for its president one William Estep, who has pretended that the thing can be used for diagnosing certain glandular diseases. Estep's fakery was dealt with at length in this department of THE JOURNAL Jan. 21, 1939 page 260. In June 1941 the Federal Trade Commission reported that its findings were that the Estemeter is incapable of detecting or disclosing improper or abnormal function of the glands and possesses no value in diagnosing diseases or conditions of the body, Estep's claims notwithstanding. The Commission, therefore, ordered Estep and his concern to cease representing in the advertising that all ailments or diseases are caused by improper or abnormal functioning of glands, that the respondents' device detects such improper functioning, indicates vitamin deficiencies, discloses whether the condition of the body is acid or alkaline, shows the condition of the blood with respect to energy or activity, analyzes or reveals impairments of the mental processes, and that this device possesses any value in the diagnosis of any ailment or condition of the body.

Gly-Cas—Medora Whinrey trading as the Gly Cas Medicine Company, and the concern's manager, Robert B. Whinrey, Muncie, Ind., were ordered by the Federal Trade Commission in May 1941 to cease and desist from certain advertising misrepresentations. Among these were that the product is a cure or remedy for constipation or affects the condition in any way other than by the temporary relief caused by a partial evacuation of the intestinal tract, that Gly Cas is a cure or competent treatment for indigestion, bloated or sour stomach, pains of rheumatism or neuritis, kidney disorders, sleeplessness or soreness of muscles, limbs or joints when such conditions are due to causes other than constipation. Back in 1932 the Food and Drug Administration declared that the Gly Cas label bore fraudulent claims in violation of the Pure Food and Drugs Act. The case was abstracted in this department of THE JOURNAL Aug. 26, 1933, page 725.

Helene Curtis Duchess Machineless Oil Wave, Machineless Oil Solution and Machineless Pads—The National Mineral Company, trading as Helene Curtis Industries, Chicago, was ordered by the Federal Trade Commission in March 1941 to discontinue advertisements which represent that the cosmetic oil contains properties that will supply nourishment or strength to the hair, cause hair to grow or nourish or invigorate the hair roots or shaft, that it is the original machineless oil wave or that the cosmetic pad contains a thermostatic device or will control or regulate heat or will do more than indicate temperature changes.

Hyral—This was put out by the Hyral Distributing Company, Wall of G. Clark and Normal A. Dodge of Fort Worth, Texas. In April 1941 the Federal Trade Commission ordered them to cease representing that their product is a new discovery, has germicidal properties, is a cure or remedy for bleeding gums or other mouth disorders beyond its action as a mild antiseptic, that it is a cure or remedy for trench mouth in excess of temporarily inhibiting the growth of the bacteria causing trench mouth, that it has any value in the treatment of pyorrhea or a mild gum pain or healthy, prevent loss of teeth, remove ulcers, pains or tartar from teeth or affect unpleasant breath odors except by temporarily removing them.

J R—This was advertised by J R Olney Sr and J R Olney Jr, trading as J R Pharmaceutical Company, Chester, Pa. In June 1941 the Federal Trade Commission ordered these persons to discontinue certain misrepresentations in their advertising, such as that the product is in all cases a cure or remedy for athlete's foot, affords instant relief from athlete's foot, itching toes, ringworm or raw, inflamed feet in excess of temporarily relieving the symptoms of such conditions, is endorsed by leading health institutions or is the only known treatment of its kind. The order also prohibited advertisements which contain the statement "Athlete's foot fungi killed in less than three minutes in laboratory test," or which otherwise represent that the preparation will, in all cases, kill or destroy the fungi causing athlete's foot.

Menstruaid Nos 1, 2, 3, 4 and 5—A J. Hartig, trading as Hartig Drug Company and H K Pharmaceutical Laboratories, Dubuque, Iowa, put out these nostrums. In May 1941 the Federal Trade Commission ordered him to cease issuing advertisements representing that his products constitute a competent treatment for delayed menstruation or that they are scientific, safe and guaranteed. Hartig also was ordered to issue no advertisements that fail to reveal that the use of these products may cause gastro intestinal disturbances and other serious conditions.

Mi-Vit-Ine, Vi-Min-Ex and Muriel Joan Beautifier—Exaggerations in the advertising of these came under the Federal Trade Commission's ban in April 1941 when it ordered Fink & Company, Inc., of New York to cease and desist from certain misrepresentations. Among these were that Mi Vit Ine is a cure or competent treatment for lowered vigor and vitality, colitis or stomach or nervous disorders, that it is a dietary corrective or is composed of a different kind of wheat germ, or that it has any value in treating alcoholism in excess of stimulating the appetite which may have been affected by reason of overindulgence, that Vi Min Ex is a competent treatment for colds, constipation, digestive disorders, neuritis, anemia and some other things or will supply all the minerals and vitamins required by the body, and that the Muriel Joan Beautifier will beautify or transform the face banish pimples, blackheads and other cutaneous blemishes or have any other permanent effect on kindred conditions.

Mrs Bee Femo Caps—In an order issued by the Federal Trade Commission in February 1941, one Carl D Bates, trading as Simmons Cut Rate Drug Store, Cinnandaugua N. Y., was forbidden to advertise in the future that this product, also known as "Femo Caps" and "Bee Caps," is a safe and competent treatment for delayed menstruation. The order also prohibits issuance of any advertising which would fail to reveal that the product might cause gastrointestinal disturbances and other serious conditions. Similar orders were issued in March 1941 against Erie Laboratories, Inc., also trading as Mack Pharmaceutical Company, and Allied Pharmaceutical Company, Cleveland, in April 1941 against Sherry's Cut Rate Drug Company, Inc., Blofield, W Va, and in May 1941 against the Capital Drug Company, Roanoke, Va.

Natural Mineral Extract—In May 1941 the Federal Trade Commission ordered the Colonial Drug Company of Tulsa, Okla., and M A Younkman, its president, trading also as Colonial Sales Company, to cease and desist from certain misrepresentations in the advertising of this product. Among these were that the thing is a cure or remedy for or possesses therapeutic value in the treatment of eczema, acne, athlete's foot, rheumatism and some twenty five other ailments, that it possesses germicidal, antiseptic or astringent properties or has value as a tonic or a blood purifier or as a treatment for women's ailments or ill nourished, backward or defective children.

Neo-Vim (Neo-Vem)—These are names variously given to a preparation put out by the Neo-Vim Company, Columbus, Ohio. In June 1941 this concern was ordered by the Federal Trade Commission to cease representing that the product is a tonic, that its use will supply increased energy or vitality, stimulate the appetite or flow of gastric juices, that it will increase the quantity or improve the quality of the blood and that it constitutes an effective treatment for indigestion or has any therapeutic value other than that of an ordinary laxative.

New Twin-Arc Sun Lamp—This was claimed by the Health Ray Manufacturing Company, Inc., Deep River, Conn., to provide "4 minutes light equivalent to one hour of sunshine" to be safe and suitable for home use by women for treating diseases without the supervision of a physician, to help build strong bones and teeth, tone up the system, stimulate the glands, improve health and constitute a cure or remedy for athlete's foot, acne, pimples and surface eruptions of the skin. In March 1941 the Federal Trade Commission ordered the Health Ray concern to discontinue these misrepresentations.

Omega Home Use Portable Machine and Mahler Electrolysis Apparatus—These devices also known as "Omega Method" and "Mahler Method" are promoted respectively by the Omega Manufacturing Company, Inc., (also called Omega Electrolysis Institute) New York, and the D J. Mahler Company, Inc., East Providence, R I. Both devices have been advertised to the public for the self treatment of superfluous hair. In June 1941 the Federal Trade Commission ordered the Omega concern to cease representing that its device is painless, pleasant, quick or easy to use and will have no ill effects on the body. Further, it ordered the Mahler concern to cease representing that its device can be operated with ordinary skill and care. Under their respective orders these concerns were further directed to cease disseminating advertisements which fail to reveal that the use of their devices by persons not trained in the technique of removing superfluous hair from the body by electrolysis may result in permanent disfigurement or cause infections or irreparable injury to health and that these mechanisms should not be used to remove hair from cancerous or syphilitic lesions, pigmented moles or other areas showing local pathologic conditions. Each of the companies had previously been restrained by U S district courts on petition of the Commission from disseminating certain advertisements of their devices pending final disposition of the Commission's case against them. Incidentally the Com-

mission in July 1938, had issued an earlier order against the Mahler firm, directing it to cease representing that its electrolysis device can be used safely by inexperienced operators for the removal of superfluous hair, dark freckles or other cutaneous blemishes.

Petalskin Cosmetics—These are put out by Petalskin Toiletries, Inc., New York, which concern in May 1941 was ordered by the Federal Trade Commission to discontinue certain advertising misrepresentations. Among these were that "Petalskin Face Cream" penetrates deeply into the pores or cleanses the pores any deeper than their external openings, that the product furnishes nourishment to the skin or supplies "Vitamin F" or has any value in restoring the skin, that "Petalskin Face Tonic" will close or refine the pores of the skin, that "Petalskin Cream Pastelle" will refine or close the pores correct or remove the cause of enlarged pores or have any effect thereon in excess of removing superficial dirt accumulations, that "Petalskin Face Powder" will not clog the pore openings, or that "Petalskin Hand Cream" will penetrate the skin or counteract aging of the skin.

Phalene and Burtone—These were put out by a J H Camp and Drug Profits Inc., Ravenswood, W Va. In March 1941 the Federal Trade Commission ordered the concern to discontinue certain misrepresentations in its advertising, such as that "Phalene" is a liver tonic or is of benefit in preventing premature aging or in removing poisons from the system beyond what an ordinary laxative can do, or that it has any value in treating sick headache, nauseated stomach, aching muscles and joints, run down condition or other disorders in excess of what its laxative action can do. The company further was ordered to cease representing, among other things, that "Burtone" would be of any benefit in bilious attacks, stomach upset, indigestion or exhaustion beyond giving temporary relief when such conditions are due to constipation.

Princess Pat Cosmetics—The Federal Trade Commission in May 1941 ordered Gordon Gordon, Ltd., and its selling agent, Princess Pat, Ltd., Chicago, to cease and desist from making certain misrepresentations in the advertising of these products. Among these were that face powders containing orris root cause pores to clog, irritate the skin and cause roughness, that "Princess Pat Powder" is nonallergic to all persons, will smooth the skin, make it soft or pliant or prevent coarse pores or blackheads, that the concern's "Muscle Oil" and "Princess Pat Irradiated Muscle Oil" will prevent crows feet, wrinkles or sagging facial muscles or penetrate beneath the skin surface and beneficially affect underlying facial muscles, that "Skin Cleanser" will penetrate beneath the surface or prevent coarse pores, pimples, blackheads or rough skin texture, and that "Skin Food Cream" or "Anti Wrinkle Cream" will nourish or feed the skin or act as a tonic for the underlying nerves or smooth out or prevent underlying wrinkles. The word "food" also was to be eliminated from the name of any Princess Pat product by the terms of the order.

Re Duce-Oids—That this must no longer be represented in advertisements as a safe or effective treatment for obesity was the gist of an order that the Federal Trade Commission issued in May 1941 against the American Medicinal Products, Inc., Los Angeles, and Ernest G Rurup, its president and directing manager. The order also provided that the advertisements must not fail to reveal that the product should be used only under competent medical supervision, as otherwise it might result in serious and irreparable injury to health, or that the product is definitely harmful if used by persons having diabetes, goiter, tuberculosis, arteriosclerosis or coronary diseases, and that its use over a long period might cause the breaking down of muscular and other tissues, as well as fat tissues, causing nervousness, irritability and increased heart rate, with possible irreparable injury to health even to a normal individual. Re Duce-Oids was dealt with at considerable length in this department of THE JOURNAL May 1, 1937, page 1357.

Ru-Ex—In March 1941 the Federal Trade Commission ordered the Ru-Ex Company of St Paul to cease representing that this nostrum is in all cases safe or harmless and to discontinue any advertising which fails to reveal that the product should not be used by persons having tuberculosis or goiter. The order provides that such advertising need contain only a statement that the preparation should be used only as directed on its label when the label warns that the stuff should not be used by those having tuberculosis or goiter. The Commission pointed out that the product, advertised as a remedy for rheumatism, arthritis and neuritis contains potassium iodide in a quantity sufficient to cause injury to health in some instances if used under conditions prescribed in the advertisements or conditions customary or usual.

Thermo-Magnetic Cushion—The Chicago Thermo-Magnetic Cushion Company and its president, A Mercer Parker, were ordered in March 1941 by the Federal Trade Commission to cease and desist from certain misrepresentations in the sale of this device. Among these were that the thing constitutes a cure or remedy for constipation, colds, rheumatism, lumbago sciatica, menstrual and nervous disorders and some other things, or that it has any value in treating such conditions beyond affording temporary relief from the pains accompanying such conditions when localized in an area affected by heat from such device. The respondents also were ordered to cease representing that the use of the "Cushion" will revitalize the human system. This device was declared fraudulent by the Post Office Department in December 1938 and barred from the mails. The case was discussed at some length in THE JOURNAL Sept 9, 1939, page 1051.

Uvursin—The John J Fulton Company of San Francisco distributor, was ordered by the Federal Trade Commission in June 1941 to cease representing that this product has substantial therapeutic value in the treatment of diabetes mellitus and that when used with a diet recommended by the company it substantially increases the efficiency of the diet as a treatment for diabetes. The Commission's findings were that the product does not have the represented efficiency in this disease as it does not deal with the causes and its use may be definitely harmful to a diabetic person in giving him a false sense of security and thus causing him to delay seeking scientific treatment. The findings further emphasized that the only recognized treatment for diabetes is diet and insulin, adjusted properly, to meet the needs of each patient.

Correspondence

SENSITIVITY TO WAR GASES

To the Editor:—I read with keen interest a communication to THE JOURNAL, Nov. 29, 1941, page 1879, by Frank B. Queen, M.D., Major, M. C., U. S. Army, and Tom Stander, M.D., Major, M. C., U. S. Army, in which they report a case of severe generalized hypersensitivity to tear gas (CN) considered to be idiopathic. "Of particular interest in the case is the fact that once before the patient had, on transient exposure by passing through a cloud of tear gas during a course of instruction while in the National Guard, experienced itching of the skin which, though remembered seventeen years after the event, was not incapacitating."

Here at Edgewood Arsenal, the center of the Chemical Warfare Service, we have observed that all persons are sensitive to chemical agents when exposed to their effect for the first time. A certain degree of individual variation in sensitivity does occur (as shown by cutaneous tests) regardless of race or color.

It has also been our experience that persons repeatedly exposed to chemical agents such as mustard gas (HS) and, more particularly, tear gas (CN)—for example, plant employees—may in some cases acquire a hypersensitivity which is probably an allergic manifestation. In no case, however, have we noted as severe a general and cutaneous reaction as that experienced by Stander.

EDWARD F. LEWISON, M.D.,
Captain, M. C., U. S. Army,
Edgewood Arsenal, Md.

ACUTE MYOCARDIAL INFARCTION

To the Editor:—The article by Leroy and Snider (THE JOURNAL, Dec. 13, 1941, p. 2019) offers convincing experimental proof that ventricular fibrillation is frequently the cause of sudden unexpected death in dogs with coronary thrombosis and myocardial infarction. However, I feel it is not entirely just to develop the therapeutic regimen they have suggested for the treatment of acute myocardial infarction in man.

Some patients with myocardial infarction die of cardiac standstill rather than ventricular fibrillation (Grieco, E. H., and Schwartz, S. P.: *Am. Heart J.* 16:595 [Nov.] 1938). There are a number of additional reasons why I think the routine intravenous administration of theophylline with ethylene diamine (aminophylline) and atropine is inadvisable.

The value of theophylline with ethylene diamine or the other so-called coronary vasodilators in the treatment of coronary artery disease is still a very debatable topic. Furthermore, ventricular fibrillation may occur on the fourteenth day following an acute myocardial infarction as well as on the first or second day, so that the suggested treatment would have to be given for that length of time. I believe a patient with an acute myocardial infarct should have as little intravenous medication as possible. An intravenous injection is not an entirely innocuous procedure in a patient with severe myocardial disease and should be avoided wherever possible. Dr. Harold Goldburgh and I have seen at least 2 cases in which we believe sudden unexpected death was due to the intravenous administration of theophylline with ethylene diamine.

One other objection can be raised to this therapy. The authors state that "if the same ratio observed in dogs should hold for human beings, one of three will die instead of three of four" with this mode of treatment. The various published statistics on the mortality of acute myocardial infarction present figures from 8 to 50 per cent. Most of the recent data give an average mortality for all attacks of about 35 per cent. In

work now in progress my associates and I have found similar mortality rates. If one out of three is the average mortality in human beings (and Masters has given a death rate as low as 8 per cent for initial attacks) the plan of therapy given by Leroy and Snider would offer little improvement over our present death rate.

SAMUEL BAER, M.D., Philadelphia.

FALLING DROP METHOD FOR SPECIFIC GRAVITY

To the Editor:—In recent years much interest has developed in the clinical applications of the falling drop method for specific gravity, the chief of which were first pointed out by us in THE JOURNAL, Jan. 8, 1927, page 91. Their usefulness has been recognized in large measure because of the notable studies of shock by Dr. John Scudder.

Clinical interest in the densimetric method has led to the appearance in the literature of a considerable number of so-called "improvements." Modifications of the method, deriving from various sources, are leading to its abuse by the employment of procedures which detract from its sensitivity.

Alluring suggestions, such as "elimination of standards and nomograms," militate against the accuracy of the method. Standard drops of pure potassium sulfate solutions are of constant composition and eliminate the vagaries due to the use of oils as the medium through which the drops fall. Vagaries occur not only because of the variability of all such oils under different conditions of temperature but also because these oils themselves, no matter how "standardized," change their physical properties gradually by such unavoidable factors as evaporation. We went through this immature procedure ourselves, as is shown by our preliminary paper (Blood Specific Gravity: Its Significance and a New Method for Its Determination, *Am. J. Physiol.* 69:654 [Aug.] 1924). Retrogression can hardly be considered an improvement.

Tables of questionable accuracy have appeared to replace the alinement chart. Allegedly simpler, such tables also require the application of a formula. Of the published tables at least one is grossly inaccurate.

For those who object to the use of an alinement chart we suggest the use of a single simple formula, as follows:
$$\text{Log. } Y = 3.9155 + 0.00267 T - (1.2953 + 0.0054 T) \log. X$$
where X = seconds, T = °C and Y = required density difference.

Besides covering all possible determinations by the alinement chart, this formula can be used for drops which require longer than one hundred seconds to fall.

As other examples of false "improvement" may be cited reduction in the length of the drop fall, which decreases sensitivity in proportion to the amount of the reduction; also the use of oils exhibiting viscosity above that of xylene and brombenzene mixtures tends to detract from sensitivity.

Editors accepting alleged "improvements" of methods should, where possible, protect themselves against acceptance of inferior and not altogether harmless material by consulting the original authors. At the side of the "patent medicine racket" and "quack physiotherapy" has arisen the "distorted method" racket!

We hope that this warning against imitations of the falling drop method, hitherto best described by those who toiled over its induction (Barbour, H. G., and Hamilton, W. F.: *The Falling Drop Method for Determining Specific Gravity*, *J. Biol. Chem.* 69:625 [Aug.] 1926), will be appreciated by all workers who may have been, or may in future be, misled.

HENRY G. BARBOUR, M.D.,
Yale University, New Haven, Conn.
WILLIAM F. HAMILTON, Ph.D.,
University of Georgia, Augusta.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb 16-17, 1942. Council on Medical Education and Hospitals, Sec, Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, January 10, page 165

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Acting Sec, Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * Medical. Little Rock, June 4-5. Sec, Dr. D. L. Owens, Harrison Electric Little Rock, June 4-5. Sec, Dr. Clarence H. Young, 1415 Main St., Little Rock.

CONNECTICUT: * Medical. Examination Hartford, March 10-11. Endorsement. Hartford, March 24. Sec to the Board, Dr. Creighton Barker, 258 Church St., New Haven. Homeopathic. Derby, March 10-11. Sec, Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16. Sec, Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 22-23. Sec, Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Jan. 20-22. Superintendent of Registration, Mr. Philip M. Harman, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec, Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, June 16-17. Sec, Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

MAINE: Portland, March 10-11. Sec, Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 10-13. Sec, Board of Registration in Medicine, Dr. Stephen Rushmore, 413 F State House, Boston.

MICHIGAN: * Ann Arbor and Detroit, June 10-12. Sec, Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Jan. 20-22. Sec, Dr. Julian T. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MONTANA: Helena, April 7-8. Sec, Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: Reciprocity Carson City, February 2. Sec, Dr. Frederick M. Anderson, 215 N. Carson Street, Carson City.

NEW HAMPSHIRE: Concord, March 12-13. Sec, Dr. T. P. Burroughs, Board of Registration in Medicine, State House, Concord.

NEW JERSEY: Trenton, June 16-17. Sec, Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 13-14. Sec, Dr. Le Grand Ward, 135 Santa Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 26-29. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, State Education Department, 315 Education Bldg., Albany.

OREGON: Portland, Jan. 21-23. Exec. Sec, Miss Lorraine M. Conlee, 608 Tailing Bldg., Portland.

SOUTH DAKOTA: * Pierre, Jan. 20-21. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TEXAS: Galveston, March 23-25. Sec, Dr. T. J. Crowe, 918 20 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec, Board of Medical Registration, Dr. F. J. Lawless, Richmond.

WEST VIRGINIA: Charleston, March 2-4. Commissioner, Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WYOMING: Cheyenne, Feb. 2-3. Sec, Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, March 10-11. Sec, Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: Feb. 14. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, April 20-21. Sec, Commission on Licensure, Dr. George C. Ruhlind, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec, Professor J. F. Conn, John B. Stetson University, De Land.

MICHIGAN: February 13-14. Sec, Miss Flora E. Dube, East Lansing.

NEW MEXICO: Albuquerque, Feb. 2. Sec, Miss Pia Joerges, State Capitol, Santa Fe.

OREGON: Portland, Feb. 14. Applications must be on file not later than Jan. 28. Sec, State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Feb. 18. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Nevada Reciprocity Report

The Nevada State Board of Medical Examiners reports 2 physicians licensed to practice medicine by reciprocity on August 4. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Illinois College of Medicine.	.....(1941)	Illinois	
McGill University Faculty of Medicine.	.....(1940)	California	

Colorado October Report

The Colorado State Board of Medical Examiners reports the written examination for medical licensure held at Denver, Oct. 8-10, 1941. The examination covered 8 subjects and included 64 questions. An average of 75 per cent was required to pass. Six candidates were examined, 4 of whom passed and 2 failed. Five physicians were licensed to practice medicine by endorsement. The following schools were represented:

School	PASSED	Year Grad	Number Passed
University of Colorado School of Medicine(1940)	1
Rush Medical College.(1941)	1
University of Tennessee College of Medicine(1940)	1
Osteopath *	1

School	FAILED	Year Grad	Number Failed
Osteopaths *	2

School	LICENSED BY ENDORSEMENT	Year Endorsement of
Rush Medical College.....	.....(1937)	Illinois
University of Kansas School of Medicine.....	.....(1930)	Kansas
University of Nebraska College of Medicine	.....(1922)	N. B. M. E.
Duke University School of Medicine.....	.....(1938)	N. B. M. E.
University of Oklahoma School of Medicine.....	.....(1938)	Oklahoma

* Examined in medicine and surgery.

Washington July Report

The Washington State Board of Medical Examiners reports the examination for medical licensure held at Seattle, July 21-23, 1941. The examination covered 7 subjects and included 70 questions. An average of 60 per cent in each subject was required to pass. Forty candidates were examined, all of whom passed. Thirty-seven physicians were licensed to practice medicine by reciprocity and 9 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad	Number Passed
College of Medical Evangelists(1941, 3)	3
Loyola University School of Medicine.(1941, 3)	3
Northwestern University Medical School.....	.....(1939), (1941)		2
Rush Medical College.(1937), (1940, 2)	3
University of Chicago, The School of Medicine.(1939)	1
University of Illinois College of Medicine..(1940), (1941)	2
University of Kansas School of Medicine(1940)	1
University of Louisville School of Medicine(1939), (1940)	2
Harvard Medical School.....(1940)	1
Washington University School of Medicine(1940, 2)	2
Creighton University School of Medicine.....(1940, 2)	2
Columbia University College of Physicians and Surgeons(1939)	2
Cornell U1923	1
Western U1935	1
University1940	1
University of Oregon Medical School....(1940, 7)	7
Jefferson Medical College of Philadelphia	1
University of Toronto Faculty	2
McGill University Faculty of	2
Albert Ludwig Universität Med(1934)	1

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists.....	.....	.....(1940)	California
Northwestern University Medical School.....	.....	.....(1937)	Tennessee,
(1939) California			
Rush Medical College.....	.....(1929), (1936)	Montana, (1939)	Missouri
University of Illinois College of Medicine.....	.....	.....(1937)	Colorado
State University of Iowa College of Medicine.....	.....	.....(1940)	Iowa
Louisiana State University School of Medicine	.....	.....(1940)	California
Johns Hopkins University School of Medicine	.....	.....(1935)	Maryland
Boston University School of Medicine.....	.....	.....(1924)	Vermont
University of Michigan Medical School.....	.....	.....(1937), (1940)	Michigan
University of Minnesota Medical School.....	.....	.....(1923), (1927)	Minnesota
St. Louis University School of	.....	.....	Missouri
Washington University School	.....	.....	Missouri
University of Nebraska College	.....	.....
(1940, 2) Nebraska			
University of Oklahoma School of Medicine.....	.....(1937), (1940)		Oklahoma
University of Oregon Medical School.....	.....(1928), (1933), (1935),		
(1938), (1939) Oregon, (1934) Utah, (1937) Wisconsin			
University of Pennsylvania School of Medicine.....	.....(1930),		
(1934) Pennsylvania			
Baylor University College of Medicine.	.....	.....(1926)	California,
(1934) Wisconsin			
University of Wisconsin Medical School.....	.....	.....(1932)	Wisconsin,
(1937) Michigan			

School	LICENSED BY ENDORSEMENT	Year Grad
College of Medical Evangelists(1938)
Northwestern(1934)
The School
Sciences(1931)
Harvard Medical School.....(1936), (1940)
University of Oregon Medical School.....(1940)
McGill University Faculty of Medicine.....(1937, 2)
Medizinische Fakultät der Universität Wien(1937)

* License has not been issued

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Evidence: Communications Between Workmen's Compensation Claimant and Examining Physician Not Privileged.—Information, the court of appeals, Franklin County, Ohio, holds, obtained by and the diagnosis made by a physician who on the request of the industrial commission examines a claimant for compensation under the Ohio workmen's compensation act to determine if the disability involved is connected with an industrial accident is not privileged under the Ohio statute which makes privileged a communication made to a physician "in that relation, or his advice to his patient." The testimony of such a physician as to his diagnosis of the claimant's condition is admissible in a proceeding to recover compensation instituted by the claimant. For a communication to qualify as privileged under the statute, said the court, it must not only appear that the evidence presented the relation of physician and patient but also that any communication made was "in that relation." In the opinion of the court it could not be said that, where a physician examines a claimant for the purpose of ascertaining conditions determinative of a fact essential to a cause of action, the physician has received a communication in the relation of physician and patient.—*McMillen v. Industrial Commission of Ohio*, 37 N. E. (2d) 632 (Ohio, 1941).

Medical Practice Acts: Revocation of License to Practice Physiotherapy.—The medical practice act of New York provides for the licensing of both physiotherapists and practitioners of medicine. The provisions of the act relating to the revocation, suspension or annulment of licenses, however, refer only to practitioners of medicine. If "a physician has been convicted in a court of competent jurisdiction, either within or without this state, of a crime," disciplinary action is authorized. In 1930 the plaintiff was granted a license to practice physiotherapy in the state of New York; in 1936 the Regents of the University of the State of New York revoked that license on proof that the plaintiff had been convicted of a crime. From such action by the Board of Regents, the plaintiff appealed to the supreme court, special term, Ulster County, New York.

The plaintiff contended that the disciplinary provisions of the medical practice act had no relation to physiotherapists but were applicable only to practitioners of medicine. The evidence showed that the plaintiff had been properly notified of the hearing before the Medical Committee on Grievances and that the same formal procedure required to hear and determine charges of unfitness against a physician was applied to the plaintiff. The supreme court held that, since the Regents were authorized to grant the plaintiff a license, they were likewise authorized, in their supervisory capacity, to revoke that license for proper and sufficient cause. The order revoking the plaintiff's license to practice physiotherapy was accordingly confirmed.—*Swift v. Graves, Commissioner of Education, et al.*, 19 N. Y. S. (2d) 686 (New York, 1940).

Medical Practice Acts: Suspension of License for Use of Quack Methods of Diagnosing.—The defendant had been licensed to practice medicine in the state of Minnesota. After entering into active practice he was twice warned by the state board of medical examiners that some of his conduct was not strictly scientific. At length one of his former patients filed a complaint before the board charging that the defendant conducted himself in a manner unbecoming to persons licensed to practice medicine and that certain methods of diagnosis used by the defendant were improper and unprofessional. On the basis of the evidence presented, the board suspended the defendant's license to practice medicine for a period of five years. From an order of the district court dismissing an appeal from the board's ruling, the defendant appealed to the Supreme Court of Minnesota.

The defendant himself described his method of diagnosis. A piece of wood pulp paper, moistened by the patient's own saliva, was placed on a selected spot on the patient's abdomen and apparently produced some "line on the person's abdomen." Different drugs were then placed in the patient's hand—"left hand for female and right hand for the male." If the drug or medicine which the patient held was the one which would effect a cure, or the one most likely to do so, some reaction, apparent to the defendant, would result from the paper on the patient's abdomen and the line on the patient's abdomen would "go down deeper, three or four finger breadths deeper." In this manner the defendant was able to determine the proper type of medication. He further frankly testified that his method of diagnosis was "fairly dependable" without his having to see or examine the patient. All he needed was the test paper, moistened by the patient's tongue. This paper would be mailed to him, placed on another person's abdomen and different drugs placed in the "subject's" hand. The diagnosis would then be made according to reactions apparent to the defendant. Absentee patients invariably received pills or pellets compounded entirely of sugar and milk. According to the defendant's testimony these pills received their therapeutic potency from "energy" with which he charged them from a machine with a certain "hook-up." There was no attempt by the defendant to justify his habitual methods of diagnosis and treatment on any scientific basis.

The defendant first contended that the proceedings before the board constituted a denial of due process or equal protection of the law because the board acted as both prosecutor and judge. The Supreme Court found that the defendant had been given ample notice of the charges against him and had been heard at great length in his own behalf. Furthermore, the whole proceeding before the board had been subjected to review by the district court. The contention was therefore overruled.

The defendant also contended that he had been denied the privilege of introducing the testimony of three witnesses in his behalf. These witnesses had been present at the hearing but had left prior to its conclusion. The board refused an adjournment in order to take their testimony. The witnesses were all laymen, and the defendant made no offer of proof to show how their testimony would have benefited him, except to indicate that they had been successfully treated. However, the court said that the defendant's diagnostic methods were "so clearly bald quackery, and so much an imposition on his patients, that the testimony of 3 patients with whom he had had good luck would not have helped him." In conclusion the court said that it was impossible to hold for the defendant "until the methods of the aboriginal medicine men, the witch doctor, and voodooism are demonstrated to be superior to those of modern science as applied in the field of medicine. The board of seven competent doctors adhered to the notion that the accomplishments of biochemistry and microscopy, with their diagnostic disclosures (which in many cases go to the point of demonstration) are superior to quackery, ancient and modern." The board's order was therefore affirmed. A petition for a writ of certiorari was denied by the United States Supreme Court.—*Minnesota State Board of Medical Examiners v. Schmidt*, 292 N. W. 255; 61 S. Ct. 135 (Minn., 1940).

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17. Dr. William D. Cutter, 535 North Dearborn St., Chicago, Secretary.

American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norville C. LaMar, 149 East 73d St., New York, Secretary.
Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.
Pacific Coast Surgical Association, San Francisco and Del Monte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.
Society of Surgeons of New Jersey, Trenton, Jan. 23. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

62:909-1128 (Nov.) 1941

- *Stature and Weight of Children of United States, with Reference to Influence of Racial, Regional, Socioeconomic and Secular Factors. H. V. Meredith, Iowa City.—p. 909.
- *Intradermal Immunization: III. Typhoid Fever. D. W. Van Gelder, Chicago, and S. Fisher, Fort Sheridan, Ill.—p. 933.
- Vaginal Flora in Children. Grace Campbell Hardy, New York.—p. 939.
- Influence of Diet on Uric Acid Excretion of Young Children. Jean E. Hawks and Gladys Everson, East Lansing, Mich.—p. 955.
- Basal Metabolism of Normal Infants from Three to Fifteen Months of Age, with Special Reference to Twins. Dorothy D. Clagett and Millicent L. Hathaway, Ithaca, N. Y.—p. 967.
- Physical and Chemical Properties of Sputum: I. Factors Determining Variations in Portions from Different Parts of Tracheobronchial Tree. F. P. Basch, P. Holinger and H. G. Poncher, Chicago.—p. 981.
- Incidence and Nature of Fetal Arrhythmias. L. W. Sontag and Helen Newbery, Yellow Springs, Ohio.—p. 991.
- School Health Service and the Private Physician. A. H. Kantrow, New York.—p. 1046.
- Communicable Disease and the School. G. M. Wheatley, New York.—p. 1052.
- Rural Communicable Disease Programs. M. R. Kinde, Battle Creek, Mich.—p. 1060.

Stature and Weight of Children.—In determining the average stature and weight of boys aged 9 to 14 years in the United States Meredith finds that boys living in the United States today, white and Negro, are 6 to 8 per cent taller and 12 to 15 per cent heavier than they were half a century ago. White boys of families of the professional and major managerial classes are 3 per cent taller and 6 per cent heavier than those of families of the unskilled and semiskilled classes. Boys in the United States of various ethnic groups in no instance appear to differ in average stature by more than 2 inches (5 cm.). The accessible averages for weight fluctuate so that a reasonable estimate of the maximal difference is precluded. Averages for stature and weight vary but slightly for white boys residing in different parts of the United States.

Intradermal Immunization.—Van Gelder and Fisher compared the intradermal and subcutaneous methods of typhoid vaccination by giving 285 children three injections of typhoid vaccine subcutaneously and 295 three injections intradermally. The vaccine used contained 1,000,000,000 typhoid bacilli in 1 cc. The first group were given 0.5, 1 and 1 cc. of the vaccine. The respective doses for the other group of children who were subdivided into three subgroups were: 0.05, 0.1 and 0.1; 0.05, 0.1 and 0.15, and 0.1, 0.15 and 0.2 cc. Forty-eight of the children who received the typhoid vaccine subcutaneously had some systemic reaction after at least one injection, usually the first. Sore arms were complained of after eighty-six injections and tender regional adenitis after seven. No significant difference in the subsequent agglutinin titer of the blood was observed whether the vaccine was given at intervals of two or three weeks. No somatic, or O, agglutinin appeared in the blood of 103 children; a titer of 20 developed in 5, of 40 in 1, of 80 in 6 and of 160 in 170. The flagellar, or H, agglutinin titer was negative for 1, 320 for 4, 640 for 262 and 1,280 for 18. Only 8 of the 295 children given the vaccine intradermally experienced any systemic mild reaction; most of them were among the subjects of the third subgroup. Somatic, or O, agglutinins were not stimulated to any considerable degree by the intradermal injections, but the three doses given the second subgroup or those given the third subgroup increased the flagellar, or H, agglutinin titers to levels about as high as those obtained by

the subcutaneous method. Despite the fact that O agglutinins are stimulated by the intradermal method, the authors believe that the method is satisfactory, because reactions are practically eliminated and the difference between the agglutinin titers of the two methods does not seem highly significant. The three doses most satisfactory for intradermal injection for subjects weighing 120 (54.5 Kg.) or more pounds are 0.05, 0.1 and 0.15 cc., because the reactions after this dosage are minimal and there is no significant lowering of the subsequent agglutinin titers.

American Journal of Medical Sciences, Philadelphia

202:625-780 (Nov.) 1941

- Some Medical, Social and Economic Problems of the Physically Handicapped. A. R. Shands Jr., Wilmington, Del.—p. 625.
 - *Werner's Syndrome: Report of First Necropsy and of Findings in New Case. B. S. Oppenheimer and V. H. Kugel, New York.—p. 629.
 - Hamilton-Schwartz Test and Hyperparathyroidism in Various Diseases. N. J. Winer, New York.—p. 642.
 - Note on Effect of Dermal and Enteral Irradiation by Radio Phosphorus on Blood Levels of Dogs. L. A. Erf, Berkeley, Calif.—p. 650.
 - Defect in Clot Formation Observed in Three Cases of Chronic Agnogenic Hemorrhagic Disease. G. Carpenter and J. G. Allen, Chicago.—p. 655.
 - *Idiopathic Hypoprothrombinemia—Apparently Unrecorded Condition. J. E. Rhoads and T. Fitz-Hugh Jr., Philadelphia.—p. 662.
 - Intraventricular Block, Including So-Called Bundle Branch Block. A. Bohning, L. N. Katz, R. Langendorf and B. Blumenthal, Chicago.—p. 671.
 - Phonograph Records of Heart Sounds, Murmurs and Arrhythmias. G. D. Geckeler, Philadelphia.—p. 685.
 - Simple Micro Test for Sulfanilamide and Its Derivatives in Blood. J. Churg and D. Lehr, Newark, N. J.—p. 687.
 - Effect of Low Calcium Diet and Calciferol (Vitamin D₂) on Calcium and Phosphorus Metabolism: Studies on Two Parathyroid Patients and One "Normal" Subject. E. Rose, W. H. Perloff and F. W. Sunderman, Philadelphia.—p. 691.
 - *Further Experience with Use of Guanidine Hydrochloride in Treatment of Myasthenia Gravis. Katharine Dodd, S. S. Riven and A. S. Minot, Nashville, Tenn.—p. 702.
 - Primary Carcinoma of Liver in Hemochromatosis. J. E. Berk and M. M. Lieber, Philadelphia.—p. 708.
 - Water Metabolism in Pregnancy. W. T. Pommerenke and H. E. Thompson Jr., Rochester, N. Y.—p. 714.
 - *Effect of Alcohol on Vision. H. Newman and E. Fletcher, San Francisco.—p. 723.
 - Diabetic State as Influenced by Diet. Anna R. Spiegelman and H. O. Mosenthal, New York.—p. 731.
 - Angina Pectoris in Young Individuals with Aortic Insufficiency: Report of Six Cases. A. C. Ernestene and R. W. Schneider, Cleveland.—p. 737.
- Werner's Syndrome.**—Oppenheimer and Kugel discuss the data of the first necropsy of a patient with Werner's syndrome. The observations at necropsy, they say, confirmed the clinical evidence of endocrine stigmatization: atrophy of the testes and the prostate gland, adenomas of the thyroid and adrenal and evidence of hyperactivity of the parathyroid. The pituitary gland showed no abnormalities. They enumerate the following as clinical evidences of parathyroid hyperactivity: generalized and localized osteoporosis, metastatic calcification, transient and recurrent hypercalcemia, abnormal negative calcium balance and increased circulation of the parathyroid secretion.

Idiopathic Hypoprothrombinemia.—The unexpected finding of a prothrombin deficiency in a white youth of 18 with supposed hemophilia led Rhoads and Fitz-Hugh to study the defects of the coagulability of this patient's blood more carefully. The prothrombin time was definitely prolonged. The diagnosis, during fifteen previous admissions to the hospital, had always been hemophilia. Because of the hypoprothrombinemia the diagnosis of hemophilia was abandoned and that of idiopathic hypoprothrombinemia was substituted. Because of the early onset of symptoms, the condition may have been congenital. The family history was negative, and the plasma prothrombin concentration of the patient's mother and brother was normal. The disease differed from typical hemophilia in that clot retraction was poor. None of the tests of hepatic function revealed any evidence of hepatic damage. At necropsy no gross hepatic abnormality was discernible, and the microscopic changes were much less than those found in patients with hypoprothrombinemia due to hepatic damage. The possibility of a toxic agent which destroyed prothrombin directly seems unlikely, as the patient did not improve with changes in diet and environment.

Neither a disorder of the digestive tract nor failure to absorb vitamin K were factors in the patient's illness. The studies carried out indicate that his coagulation defect was due to a lack of prothrombin and to a qualitative defect in fibrinogen without a quantitative defect.

Guanidine Hydrochloride in Myasthenia Gravis.—On the basis of the results that Dodd and her associates obtained with guanidine hydrochloride in 6 patients with myasthenia gravis and those obtained in 21 cases by other workers the authors conclude that the drug causes temporary improvement in muscular function in most patients with the disease. These patients have an increased tolerance to guanidine. Prolonged medication produces sustained improvement without harmful effects. Generally less of the drug is required after several months of adequate individual medication. Guanidine, unlike prostigmine, does not inhibit the activity of choline esterase. It may play a fundamental part in restoring irritability to cells.

Effect of Alcohol on Vision.—Newman and Fletcher studied the effect that alcohol had on the vision of 35 men and 15 women drivers after they had consumed within fifteen to thirty minutes at least 1 ounce (30 cc.) of whisky to each 30 pounds (13.6 Kg.) of body weight. Seven tests (for visual acuity, depth perception, distance judgment, lateral fields of vision, eye coordination, glare resistance and glare recovery) were given the subjects prior to their ingestion of the whisky and again forty-five minutes after its consumption. The alcohol produced changes in all the components of vision tested but not all the components of all the persons tested were affected. Although there was an obvious tendency for persons with higher concentrations of alcohol in their blood (which varied from 58 to 218 mg. per hundred cubic centimeters) to show more changes, particularly major changes, this was far from true in every instance. From the data it is impossible to select any single concentration as a criterion of dangerous intoxication. The figure of 150 mg. per hundred cubic centimeters proposed as *prima facie* evidence of drunkenness by the National Safety Council, would be too high for some subjects and too low for others. In every volunteer with a concentration of more than 115 mg. of alcohol per hundred cubic centimeters of blood there was a significant change in at least one of the tests performed. The greatest number of changes occurred in visual acuity, the smallest in the field of vision.

American Journal of Ophthalmology, Cincinnati

24:1233-1348 (Nov.) 1941

Clinical Ocular Conditions Associated with Vitamin B Complex Deficiencies. L. V. Johnson, Cleveland—p. 1233

Sensitivities of Color Receptors as Measured by Dark Adaptation. J. Mandelbaum and Esther U. Mintz, New York—p. 1241

Physiologic Studies on Neural Mechanisms of Visual Localization and Discrimination. S. A. Talbot and W. H. Marshall, Baltimore—p. 1255

Eye Disease Due to Vitamin Deficiency in Trinidad. Tropical Nutritional Amblyopia, Essential Corneal Epithelial Dystrophy, Conjunctival Bleeding in Newborn. Vivian M. Metivier, Port-of-Spain, Trinidad, British West Indies—p. 1265

Cephalic Tetanus Following Injury to Eyeball. G. G. Jayme Goyar, Rio de Janeiro, Brazil—p. 1281

Role of Home Training in Orthoptics. Elizabeth K. Stark, New York—p. 1299

Eye Disease and Vitamin Deficiency in Trinidad.—Metivier points out that, while frank beriberi and classic pellagra are clinical curiosities in Trinidad, the ocular manifestations of vitamin B deficiency, particularly vitamin B₂, are frequent. As long as attempts are made to designate all vitamin deficiency diseases as pellagra the great morbidity in the colonies due to vitamin deficiencies will not be unearthed and recent advances will have no meaning. The author discusses the closely related syndromes in which ocular changes and visual defects are prominent features of vitamin deficiency in warm climates. "Tropical nutritional amblyopia" is suggested for the disease which results from failure of vitamin B₂ to maintain nutrition of the optic nerve, either directly or through retinal elements. When the nutrition of the cornea suffers from deficiency of vitamin B₂, essential corneal epithelial dystrophy, particularly arboflavinosis, is the disease that develops in Trinidad. A dry parched skin is seen in patients with ocular disease due to vitamin B₂ deficiency.

American Journal of Physiology, Baltimore

134:683-822 (Nov.) 1941. Partial Index

Respiratory and Circulatory Responses to Acute Carbon Monoxide Poisoning. H. Chiodi, D. B. Dill, F. Consolazio and S. M. Horvath, Boston—p. 683

*Emptying Time of Stomach of Old People. F. J. Van Liere and D. W. Northup, Morgantown, W. Va.—p. 719

Optimal Sodium Chloride Concentration for Oral Saline Diuresis. J. M. Coon, R. O. Noojin and C. Pfeiffer—p. 723

Diuretic Effect of Potassium, Calcium and Magnesium Given Orally in Salt Solution. C. Pfeiffer, C. Roby and R. B. Smith—p. 729

Enzymatic Inactivation of Cholecystokinin by Blood Serum. H. Greengard, I. F. Stein Jr. and A. C. Ivy, Chicago—p. 733

Red Cell Counts, Percentage Volume and Opacity of Suspensions. E. Ponder, Mineola, N. Y.—p. 739

Shock Following Venous Occlusion of Leg. S. Perlow, S. T. Kilham, L. N. Katz and R. Asher, Chicago—p. 755

Action of Exercise on Ketosis. D. R. Drury, Los Angeles, A. N. Wied and E. M. Mackay, La Jolla, Calif.—p. 761

Fetal Aspirations of Amniotic Fluid. N. W. Shock, with assistance of L. A. Telesco and W. Heisler, Los Angeles—p. 769

Effect of Insulin on Cardiac and Liver Glycogen. G. Evans, Minneapolis—p. 798

Inhibition of Pyloric Sphincter Region by Digestion Products of Fat. J. P. Quigley and I. Meschan, Cleveland—p. 803

Roentgenographic Observations Suggesting Difference Between Total and Circulating Blood Volume. R. B. Rutherford, E. W. Godfrey and J. Q. Griffith Jr., Philadelphia—p. 808

Gastric Emptying Time of Old People.—Van Liere and Northup determined, under the fluoroscope, the gastric emptying time of 12 men from 58 to 84 years of age. Ten of the subjects were indigent persons residing in a county infirmary, 1 was a college professor and 1 was a janitor. The average gastric emptying time of the 12 men was one and ninety-four hundredths hours, the extremes ranged from one and thirty-three hundredths to two and seventy-five hundredths hours. The corresponding figures for 59 young adults were two and eight hundredths, one and three hundredths and three and eight hundredths hours. It seems that senescence does not influence gastric emptying.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

46:447-604 (Oct.) 1941

Classification of Tumors of Thyroid. S. Warren, Boston—p. 447

Radiation Treatment of Carcinoma of Thyroid. H. F. Hare, Boston—p. 451

Experiences in Treatment of Malignant Tumors of Thyroid Gland. U. V. Portmann, Cleveland—p. 454

Radioactive Iodine as Indicator in Thyroid Physiology. Observations on Rabbits and on Gouty Patients. S. Hertz, Boston—p. 467

Carcinoma of Thyroid. F. H. Lacey, Boston—p. 469

*Roentgenologic Diagnosis of Primary Carcinoma of Liver. R. Schatzki, Boston—p. 476

An Unusual Intracranial Foreign Body. R. Drane, Savannah, Ga.—p. 484

Neuroblastoma Sympatheticum. Roentgenologic Appearances and Radiation Treatment. G. M. Wyatt and S. Farber, Boston—p. 485

Multiple Striae Parallel to Epiphyses and Ring Shadows Around Bone Growth Centers. C. A. Strimmel, Fort Benning, Ga.—p. 497

Treatment of Mixed Tumors of Salivary Glands by Roentgen Rays and Radium. J. McFarland, Philadelphia—p. 506

Dermatoses Associated with Roentgen Therapy. S. G. Castiglione, Philadelphia—p. 518

Roentgen Radiation as Anesthetic Agent. J. R. Curtis and Lucille M. Bond, New York—p. 532

Experimental Modification of Sensitivity of Yeast to Roentgen Ray. R. S. Anderson and H. Turkowitz, New York—p. 537

Nonharmful Effects of Irradiation of Pituitary Region of Rabbit. J. Kotz, J. F. Elward and Elizabeth Parler, Washington, D. C.—p. 543

*Roentgenologic Diagnosis of Hepatic Carcinoma.

According to Schatzki, the roentgen demonstration of a mass in the region of the liver and the lobulation of the diaphragmatic shadow may be produced by metastatic tumors, echinococcus cysts and possibly gumma as well as primary hepatic cancer. Any localized bulge of the diaphragm in a patient with proved cirrhosis of the liver should be taken seriously, particularly if it occurs in an unusual location, and the possibility of a primary hepatic cancer in all such patients should be considered. A combination of cirrhosis of the liver (varices) and a mass in the region of the liver is highly suggestive of a primary hepatic cancer. The combination of cirrhosis (varices) and positive evidence of cancer (i. e., pulmonary metastasis) is less conclusive. However, the presence of all three factors makes the diagnosis of primary hepatic cancer extremely likely. The author reports 4 cases in which a roentgen diagnosis of hepatic carcinoma was made.

Annals of Surgery, Philadelphia

114:801-960 (Nov.) 1941

- *Prophylaxis of Pulmonary Embolism by Division of Femoral Vein. J. Fine and J. B. Sears, Boston.—p. 801.
- Management of Lymph Nodes in Neck—Metastatic from Carcinoma of Mouth. R. H. Kennedy, New York.—p. 813.
- Tumors of Carotid Body: Clinical and Pathologic Considerations of Twenty Tumors Affecting Nineteen Patients (One Bilateral). S. W. Harrington, O. T. Clagett and M. B. Dockerty, Rochester, Minn.—p. 820.
- Successful Removal of Saddle Embolus of Aorta, Eleven Days After Acute Coronary Occlusion. I. S. Ravdin and F. C. Wood, Philadelphia.—p. 834.
- Reflections on Gastroduodenal Surgery. J. R. Judd, Honolulu, T. H.—p. 840.
- Lymphogranuloma Venereum: Treatment of Severe Cases of Anorectal Type by Mucosal Stripping Operation: Preliminary Report. R. H. Patterson, New York.—p. 847.
- *Endometriosis: Its Significance. J. V. Meigs, Boston.—p. 866.
- Intra-Abdominal Hernia: Review of Thirty-Nine Cases in Which Treatment Was Surgical. C. W. Mayo, L. K. Stalker and J. M. Miller, Rochester, Minn.—p. 875.
- Testicular Transplantation: Successful Autoplastic Graft Following Accidental Castration. W. M. Kearns, Milwaukee.—p. 886.
- Present Status of Intravenous Fluid Treatment of Traumatic and Surgical Shock. H. N. Harkins and R. D. McClure, Detroit.—p. 891.
- Clinical Significance of Prothrombin Deficiency and Its Treatment. J. D. Stewart, Boston.—p. 907.
- Treatment of Fractures of Humerus by Means of Hanging Plaster Case—"Hanging Cast." A. D. LaFerté and P. D. Nutter, Detroit.—p. 919.
- *Early Diagnosis of Pott's Disease. R. I. Harris, Toronto, Canada, and H. S. Coulthard, Weston, Ont., Canada.—p. 931.
- "Unexplained" Infections in Clean Operative Wounds: Importance of Air as Medium for Transmission of Pathogenic Bacteria and Bactericidal Radiation as Method of Control: Analysis of Over 5,000 Operations, Covering Period of Ten and One-Half Years. D. Hart and S. E. Upchurch, Durham, N. C.—p. 936.

Prophylaxis of Pulmonary Embolism.—Fine and Sears state that division of the femoral vein is advisable as a routine prophylactic measure against pulmonary embolism when thrombosis of the deep veins of the lower leg is present or suspected. They do not refer to pulmonary embolism arising from auricular fibrillation or any vascular disorder of the venous system cephalad to the great veins in the pelvis. The value of such prophylaxis can be affirmed only after it has been done in a large series of patients with phlebitis and the incidence of fatal and nonfatal pulmonary embolus has been lowered significantly. The most desirable site for blocking the discharge of an embolus from the deep veins of the lower leg is just below the vena profunda.

Endometriosis.—Meigs believes that the increased frequency of endometriosis, a representation of an abnormal physiology, is due to late marriage and delayed and infrequent childbearing. To prove this contention he compares the incidence of endometriosis among 400 consecutive private patients, most of them fairly well to do, who had abdominal gynecologic operations and 400 patients from the Massachusetts General Hospital. The hospital patients are of the social status that marries early and has children frequently. The more normal functions of this group are reflected in the small incidence of endometriosis. Of the private patients 112, or 28 per cent, showed microscopic evidence of endometriosis, as against 23, or 5.8 per cent, in the Massachusetts General Hospital group. Further study shows that endometriosis is a stigma of infertility, and it is due to uninterrupted menstrual cycles, because of late marriage and infrequent childbearing. It is increasing among women having few children and having them late in life. Early marriage and early and frequent childbearing should be urged.

Pott's Disease.—Harris and Coulthard emphasize three early manifestations of Pott's disease which permit early diagnosis: 1. An analysis of the quality of the pain from which the patient suffers demonstrates that it is of spinal origin, is intensified by movement, weight bearing and jolting and is relieved by rest. 2. Roentgen study reveals a thin intervertebral disk before the characteristic caries of the vertebral bodies is manifest. 3. Aspiration of the focus of infection under roentgen guidance will yield pus from which a positive diagnosis can be made.

Archives of Pathology, Chicago

32:689-888 (Nov.) 1941

- *Vitamin A Deficiency and the Nervous System. S. B. Wolbach and O. A. Bessey, Boston.—p. 689.
- Neuropathologic Changes in Experimental Carbon Disulfide Poisoning in Cats. A. Ferraro, G. A. Jervis and D. J. Flicker, New York.—p. 723.
- Growth Processes in Mammary Glands of Mice of Strains Differing in Incidence of Mammary Carcinoma. L. Loeb and V. Sontzeff, St. Louis.—p. 739.
- Relation of "Anitschow Myocyte" to Rheumatic Inflammation. B. J. Clawson, Minneapolis.—p. 760.
- Kaposi's Disease. D. Symmers, New York.—p. 764.
- *Incidence of Occult Adenocarcinoma of Prostate: After Fifty Years of Age. E. Baron and A. Angrist, Jamaica, N. Y.—p. 787.
- Effects of Continued Administration of Sulfathiazole and Sulfapyridine in Monkeys. D. R. Climenko, Rensselaer, N. Y., and A. W. Wright, Albany, N. Y.—p. 794.
- Perchlorate Method for Determining Concentration of Alcohol in Expired Air as Medicolegal Test. W. W. Jetter, Boston, and G. C. Forrester, Niagara Falls, N. Y.—p. 828.
- Tumors of Spinal Cord. J. W. Kernohan, Rochester, Minn.—p. 843.

Vitamin A Deficiency and the Nervous System.—From their experiments on laboratory animals Wolbach and Bessey predict that acute uncomplicated vitamin A deficiency in infants would produce the same changes: an overgrowth of the central nervous system (in relation to osseous growth) with consequent mechanical injuries to the brain, spinal cord and nerve roots.

Incidence of Occult Adenocarcinoma of Prostate.—Baron and Angrist state that the examination of random sections of the prostate gland in 364 men more than 50 years of age revealed adenocarcinoma in 14.8 per cent; the prostates of 9.9 per cent contained occult adenocarcinoma, and 4.9 per cent of the 364 patients died of extensive prostatic adenocarcinoma with metastasis.

Bulletin New York Academy of Medicine, New York

17:823-884 (Nov.) 1941

- Carcinoma of Stomach Emphasizing Some Misconceptions of the Disease. J. W. Hinton, New York.—p. 829.
- Acute Surgical Conditions of Abdomen in Children. C. W. Lester, New York.—p. 844.
- Treatment of Disorders of Menopause. R. T. Frank, New York.—p. 854.
- Medical Testimony in Personal Injury Action. W. J. Kernan, New York.—p. 864.
- Evolution of Clinical Sphygmomanometry. W. H. Lewis Jr., New York.—p. 871.

Canadian Medical Association Journal, Montreal

45:385-478 (Nov.) 1941

- Human Cord Serum Globulin in Modification and Prevention of Measles. L. P. Strean, G. J. Strean, Montreal; D. Lapointe and E. Dechene, Quebec.—p. 385.
- Special Problems of the Royal Canadian Air Force Medical Officer. G. E. Hall, Weston, Ont.—p. 387.
- Peptic Ulcer Problem. R. W. I. Urquhart, A. C. Singleton and W. R. Feasby, Toronto.—p. 391.
- Comparison of Isinglass and Gelatin as Blood Substitutes. E. T. Waters, Toronto.—p. 395.
- Postwar Problems. A. F. Menzies, Morden, Man.—p. 399.
- Right Sided Aortic Arch: Report of Two Cases. D. Eisen and H. N. Taube, Toronto.—p. 402.
- Total Gastrectomy: Report of Case. S. S. Peikoff, Winnipeg, Man.—p. 407.
- Anterior Urethral Diverticulum Complicated by Calculi. G. C. Seymour, Barrie, Ont.—p. 410.
- Problems in Diagnosis of Acute Surgical Lesions of Abdomen. O. W. Niemeier, Hamilton, Ont.—p. 412.
- *Blood Prothrombin in Newborn: Effect of Vitamin K on Blood Prothrombin and on Hemorrhagic Disease of Newborn. S. G. Ross and H. T. Malloy, Montreal.—p. 417.
- Results of Thoracoplasty in Advanced Pulmonary Tuberculosis: Preliminary Report. D. Ackman, Montreal.—p. 422.
- *Paroxysmal Tachycardia in Childhood. H. Baker, Fairy Glen, Sask.—p. 426.
- Appendicitis: Statistical Study. A. L. Murphy and W. E. Hirtle, Halifax, N. S.—p. 430.
- Investigation and Treatment of Injuries About Knee Joint. H. R. Inksater, Calgary, Alta.—p. 433.
- Primary Carcinoma of Lung: Pneumonectomy. W. C. Whiteside, Edmonton, Alta.—p. 436.
- Pneumothorax: Therapeutic Use of Oxygen and Other Gases. H. R. Griffith, Montreal.—p. 439.

Blood Prothrombin in Newborn.—Ross and Malloy found that newborn infants showing asphyxia have spontaneous hemorrhage more frequently than normal infants. In 3 of 9 such infants spontaneous bleeding developed. The maximal prothrombin time of these 9 infants was between 110 and 300 seconds, with an average of 195 seconds. These high values and the

fact that 3 bled spontaneously may be of some significance. Anoxemia may be a factor in the production of hypoprothrombinemia in this condition. There is no relationship between physiologic jaundice of the newborn and hypoprothrombinemia. Therefore the authors suggest that a prophylactic dose of vitamin K might be of value for premature infants (because of their tendency to traumatic and spontaneous hemorrhage) and in newborn infants with asphyxia. Vitamin K is also indicated in traumatic bleeding, especially intracranial hemorrhage.

Paroxysmal Tachycardia in Childhood.—Baker reports the presence of the classic type of paroxysmal tachycardia in a girl of 16. Clinically the girl's heart was normal, in spite of recurrent attacks of paroxysmal tachycardia for eight years' (since she was 8). The tachycardia conformed to the classic adult type in every respect.

Canadian Public Health Journal, Toronto

32:491-538 (Oct.) 1941

- Morbidity Survey in Municipal Doctor Areas in Manitoba: May 1, 1938 to April 30, 1940. F. W. Jackson, Winnipeg, Man.—p. 491.
Recent Advances in Tuberculosis Control in Ontario. G. C. Brink, Toronto.—p. 502.
New Immunization Program in Royal Canadian Air Force. A. H. Sellers, Toronto.—p. 509.
Report of Outbreak of Trichinosis. W. J. Deadman and D. C. Wilson, Hamilton, Ont.—p. 513.
Fatigue Syndrome in School Children. H. E. Edwards and W. J. Tamblin, Toronto.—p. 518.

Georgia Medical Association Journal, Atlanta

30:415-456 (Oct.) 1941

- Further Observations on Treatment of Cancer of Breast: Review of 139 Reports of Cases. T. Harrold, Macon.—p. 415.
Trends in Medical Education in Georgia: Undergraduate Medical Education. G. L. Kelly, Augusta.—p. 423.
Graduate Medical Education. R. H. Oppenheimer, Atlanta.—p. 429.
Medical Preparedness. J. E. Baylis, Atlanta.—p. 434.
So That Is Allergy. M. A. Ehrlich, Bainbridge.—p. 438.
Surgery as Aid to Diagnosis. F. W. McRae, Atlanta.—p. 441.
Large Ovarian Cyst: Dermoid Variety. S. E. Sanchez, Barwick.—p. 444.

Journal of Clin. Endocrinology, Springfield, Ill.

1:859-930 (Nov.) 1941

- *Hyperthyroidism in the Adolescent: Analysis of Eighteen Cases Under Eighteen Years of Age. J. B. Black Jr. and B. Webster, New York.—p. 859.
Pancreatic Encephalopathy. N. O. Rothermich and E. von Haam, Columbus, Ohio.—p. 872.
Creatine-Creatinine Metabolism in Older Patients with Benign Prostatic Enlargement. M. B. Sutton, New York.—p. 882.
Biologic Assay of Blood Estrogens by Intravaginal Application of Extracts and Desiccated Material. A. S. Albrieux, San Francisco.—p. 889.
Distribution of Estrogens in Blood of Pregnant and Nonpregnant Women. A. S. Albrieux, San Francisco.—p. 893.
Control of Menopausal Symptoms with Estradiol Benzoate: Impressions Gained in Treating a Group of Forty Patients. E. G. Waters, Jersey City, N. J.—p. 895.
*Management of Primary Amenorrhea in Hypopituitarism. E. A. Ornstein, New York.—p. 899.
Laurence-Moon-Biedl Syndrome: Case Report with Complete Autopsy. N. L. Anderson, Durham, N. C.—p. 905.
Cushing's Syndrome: Two Cases Treated with Stilbestrol. A. E. Rakoff, A. Cantarow and K. E. Paschakis, Philadelphia.—p. 912.
Pitressin Inhibiting Substance in Serum of Patient with Transient Diabetes Insipidus. R. B. Rutherford and J. Q. Griffith Jr., Philadelphia.—p. 916.
Extraction and Assay of Lactogenic Hormone in Postpartum Urine. J. Meites and C. W. Turner, Columbia, Mo.—p. 918.
Growth and Sex Hormones. M. A. Goldzieher, New York.—p. 924.

Adolescent Hyperthyroidism.—Black and Webster state that, from September 1932 to September 1940, 747 patients with diffuse or nodular toxic goiters were seen at the New York Hospital and that 26 of them were less than 18. Eighteen of the 26 adolescents were patients of the medical and surgical services; 17 had toxic diffuse goiter and 1 had a toxic nodular goiter. In the group there were 15 girls and 3 boys aged 10 to 17 years at the time the symptoms ensued. In 13, all girls, the onset of symptoms occurred at the 13 and the 14 year age level. The etiologic factors involved include infection (either closely preceding or associated with the appearance of symptoms), psychic trauma, exophthalmic goiter or "goiter trouble" in

parents or close relatives and a combination of the foregoing factors. Only 1 of the patients, a boy, had another associated endocrine disorder; he showed signs of hypogonadism. All but one of the glands that were resected were described by the pathologist as "hyperplastic goiters" with various degrees of involution. The exception was described as an "intermediate adenomatous goiter (fetal adenoma)." The symptoms of this patient were entirely similar to those of the other patients although exophthalmos was not present. Conservative, non-surgical treatment failed to arrest the disease of 5 of 6 patients. After thyroidectomy the growth and the mental development of the children operated on proceeded, in the absence of any recurrence, in an entirely normal manner. Postoperative myxedema of any permanent importance did not occur. However, post-operative recurrences and persistent hyperthyroidism occurred in 3 of the patients who had thyroidectomy. This complication apparently developed irrespective of the mode or the duration of the preoperative or the postoperative management. Therefore thyroidectomy is a therapeutic necessity, and the physician, while fully aware of the risk entailed, has no reasonable alternative but to advise such a procedure.

Amenorrhea and Hypopituitarism.—Ornstein employed estrogens for the treatment of 4 patients (aged 27, 24, 19 and 16 respectively) with hypopituitarism of the Lorain-Levi type, with sexual and somatic infantilism. Continuous treatment induced cyclic uterine bleeding associated with changes in the secondary sex characteristics. Parenteral and oral therapy were equally effective. The implantation of pellets of estradiol benzoate complemented by regularly spaced periods of oral administration of progesterone was most effective. When therapy was discontinued or the gonadotropes were used, bleeding ceased and the increased mammary tissue regressed about 25 per cent. Pregnant mare's serum and a combination of chorionic gonadotropin and an anterior pituitary gonadotropic extract were ineffective in inducing bleeding or in maintaining the secondary sex characteristics. The psychologic improvement alone justifies the treatment. Therapy should not be begun before 17, or at least until delayed puberty has been ruled out.

Journal of Clinical Investigation, New York

20:467-606 (Sept.) 1941

- Influences of Erythrocytes and of Leukocytes on Stability and Transfer of Ascorbic Acid in Human Blood. M. Heinemann, New Haven, Conn.—p. 467.
Evidence for General Distribution of Peripheral Resistance in Coarctation of Aorta: Report of Three Cases. J. M. Steele, New York.—p. 473.
Treatment of Cirrhosis of Liver by Nutritious Diet and Supplements Rich in Vitamin B Complex. A. J. Patek Jr. and J. Post, New York.—p. 481.
Intravenous Glucose Tolerance Test. E. L. Lozner, Boston; A. W. Winkler, New Haven, Conn.; F. H. L. Taylor, and J. P. Peters, New Haven, Conn.—p. 507.
Peripheral Vascular Response to Exercise in Hyperthyroid State. D. I. Abramson and S. M. Fierst, Cincinnati.—p. 517.
Studies on Pain: Observations on Pain Due to Local Cooling and on Factors Involved in "Cold Pressor" Effect. S. Wolf and J. D. Hardy, New York.—p. 521.
Formulas for Afferent and Efferent Arteriolar Resistance in Human Kidney: Application to Effects of Spinal Anesthesia. H. Lampert, New York.—p. 535.
Relative Changes in Afferent and Efferent Arteriolar Resistance in Normal Human Kidney. H. Lampert, New York.—p. 545.
Mechanisms of Respiratory Failure Under Barbiturate Anesthesia (Evipal, Pentothal). H. K. Beecher and C. A. Moyer, Boston.—p. 549.
Clinical Studies with Aid of Radioactive Phosphorus: I. Absorption and Distribution of Radiophosphorus in Blood and Its Excretion by Normal Individuals and Patients with Leukemia. L. A. Erf and J. H. Lawrence, San Francisco.—p. 567.
Studies on Neoplasms with Aid of Radioactive Phosphorus: III. Phosphorus Metabolism of Phospholipid, Acid Soluble and Nucleoprotein Fractions of Various Tissues of Normal and Leukemic Mice Following Administration of "Tracer" and "Therapeutic" Doses of Radiophosphorus. L. W. Tuttle, L. A. Erf and J. H. Lawrence, San Francisco.—p. 577.
Experimental and Clinical Studies on Gramicidin. W. E. Herrell and Dorothy Heilman, Rochester, Minn.—p. 583.
Acute Hemolytic Anemia from Sulfonamides. C. L. Fox Jr. and R. Ottenberg, New York.—p. 593.
Spectrophotometry of Fairley's New Blood Pigment, Methemalbumin. C. L. Fox Jr., New York.—p. 603.

Journal of Experimental Medicine, New York

74:397-510 (Nov.) 1941

- Transplantable Epitheliomas of Lip and Mouth of Catfish: I. Pathology: Transplantation to Anterior Chamber of Eye and into Cornea B Lucke and H Schlumberger, Philadelphia—p 397.
- *Complement Fixation Test in Diagnosis of Virus Infections of Central Nervous System J Casals and R Palacios, New York—p 409
- Cultivation of Hog Cholera Virus C TenBroeck, Princeton, N J.—p 427.
- *Neutralizing Antibodies in Human Serum After Influenza A: Lack of Strain Specificity in Immunologic Response. F. L. Horsfall Jr. and E R Rickard, New York—p 433
- Studies on Conditions Affecting Survival in Vitro of Malarial Parasite (*Plasmodium Lophurae*) W Trager, Princeton, N J.—p 441
- Influence of Extraneous Protein and Virus Concentration on Inactivation of Rabbit Papilloma Virus by X Rays W. F. Friedewald and R S Anderson, New York—p 463.
- Comparative Virulence of St. Louis Encephalitis Virus Cultured with Brain Tissue from Innately Susceptible and Innately Resistant Mice. L T. Webster and Mary S. Johnson, New York—p 489
- Serologic Specificity of Particulate Components Derived from Various Normal Mammalian Organs W Henle, L A Chambers and V. Groupé, Philadelphia—p 495.

Virus Infections of Central Nervous System.—Casals and Palacios describe a complement fixation test for various virus infections of the central nervous system for which emulsions of infected brain tissue are used. The brain emulsion is frozen, thawed and then centrifuged in an angle head centrifuge at 3,500 revolutions per minute for one hour. The method has proved reliable in experiments with rabies, St Louis encephalitis, Japanese B encephalitis, lymphocytic choriomeningitis, eastern and western equine encephalomyelitis, louping ill and spontaneous encephalomyelitis of mice (Theiler's disease). Complement fixing antibodies in high titer were found in the serums of rabbits, guinea pigs, mice and dogs immunized with rabies virus. Complement fixing antibodies were present in high titer in the serum from 2 persons eight years after an attack of louping ill, from 5 persons two and one-half years after an attack of eastern equine encephalomyelitis and from 2 persons two and one-half years after they had western equine encephalomyelitis. Complement fixing antibodies of St. Louis encephalitis and lymphocytic choriomeningitis have been found soon after infection but not after long periods.

Neutralizing Antibodies After Influenza A.—Horsfall and Rickard determined the neutralizing capacity of the serum from 5 patients with influenza A against three antigenically different strains of influenza A virus and one strain of swine influenza virus. With a single exception all the serum produced almost identical quantities of neutralizing antibodies against each of the virus strains used. Although the serum of the fifth patient had similar concentrations of antibodies against strain 399, the PR8 strain of influenza A virus and the swine influenza virus, only a slight increase in antibodies was demonstrable against the W. S. strain. The increases in neutralizing antibody levels of the serum of the 5 patients after infection were as readily demonstrable when one antigenically different strain of influenza A virus was used as when another one was used. Furthermore, even when the swine influenza virus was used closely similar alterations in antibody levels were encountered. The data of the study indicate that in adults, irrespective of the time which elapses after the onset of influenza A, there is an almost complete lack of strain specificity in the immunologic response that follows.

Journal of Immunology, Baltimore

42:109-250 (Oct.) 1941. Partial Index

- Factor in Normal Human Blood Which Participates in Streptococcal Fibrinolysis H Miskione, New York—p 109.
- Development of Neutralizing Antibodies to Viruses of Equine Encephalomyelitis (Western Strain) and St. Louis Encephalitis in Blood and Cerebrospinal Fluid of Man and Animals, Together with Recovery of St. Louis Virus from Blood of Monkeys Beatrice F. Howitt, San Francisco—p 117.
- Studies with Hemophilus Pertussis VI Antigenicity of Toxins and Relation to Other Cellular Components from Several Phases E W. Flosdorf, A Bondi and T. F. Dozors, Philadelphia—p 133.
- Effect of Dilution on Reaction Between Pneumococcus and Its Specific Antibody: II. Dilution Phenomenon M. C. Morris, St. Louis—p 219
- Further Studies in Passive Protection Against Virus of Influenza by Intranasal Route J. Zellit and W. Henle, Philadelphia—p 239.

Journal of Infectious Diseases, Chicago

69:97-192 (Sept.-Oct.) 1941

- Chemotherapeutic Testing with Sodium Sulfathiazole in Developing Chick Embryo A. J. Weil and L. S. Gall, Pearl River, N. Y.—p 97.
- Studies on Purification of Alum Precipitated Diphtheria Toxoid. S. C. Seal and Sylvia J. Johnson, Jamaica Plain, Mass—p. 102.
- Determination of Activity of Various Drugs Against Malaria Parasite L T. Coggeshall and J. Maier, New York.—p. 108
- Accessory Growth Factor Requirements of Some Representatives of Brucella Group S. A. Koser, Beverly B. Breslove and A. Dorfman, Chicago—p 114.
- Treatment of Group C. Streptococcus Infection in Guinea Pigs with Vitamin C and Sulfanilamide. L. Karel, T. C. Grubb and C. W. Chapman, Baltimore—p 125.
- Canine Leptospirosis in Pennsylvania. Clara Raven, Philadelphia—p 131.
- Comparison of Seven Strains of Virus of Lymphogranuloma Venereum. Erud C Rodaniche, Chicago—p. 138
- Oxidation Reduction Potentials in Salmonella Cultures: III. Relation Between Characteristic Potential and Antigenic Structure. W. Burrows, Chicago—p 141.
- Actinomycetes of Human Mouth. B. G. Bibby and H. T. Knighton, Rochester, N. Y—p 148.
- Relation of Volatile Fatty Acids and Hydrogen Sulfide to Intestinal Flora O. Bergeim, A H. Hanszen, L. Pincussen and E. Weiss, Chicago—p 155.
- Salmonella Types in Silver Foxes R G. Benedict, Elizabeth McCoy and W. Wisnicky, Madison, Wis—p 167.
- Quantitative Studies on Neutralization of Purified Papilloma Virus: II Reversibility of Serum Effect by Simple Dilution. Dorothy Beard, A R. Taylor, D. G. Sharp and J. W. Beard, Durham, N. C.—p 173.

Journal-Lancet, Minneapolis

61:393-434 (Oct.) 1941

- The Sex Steroid Family. E C. Hamblen, Durham, N. C.—p 393.
- Method of Evaluating Effect of Treatment in Neuromuscular Disorders. R. S. Schwab, Boston, and J. E. Skogland, Minneapolis—p 401.
- Vulnerable Structures of Bacterial Cell. R. J. Dubos, New York.—p 405.
- Chronic Gastritis: Clinical and Gastroscopic Study. J. B. Carey, Minneapolis—p. 408.
- Hospitalization of University Students. E. L. Shrader, St. Louis.—p. 411.
- Therapeutic Procedures in Chronic Rheumatoid Disease. M. Wetherby, Minneapolis.—p. 414.
- Spontaneous Pneumothorax of Unknown Etiology. Elizabeth A. Leggett, Kent, Ohio.—p. 417.
- Poison Antidotal Kit. Annette C. Washburne, Madison, Wis—p 420
- Rowing Method of Artificial Respiration. M. C. Rosekrans, Neillsville, Wis—p. 421.
- What the Public Knows About Health. M. Derryberry, Washington, D. C.—p. 423.

Journal of Nutrition, Philadelphia

22:439-540 (Nov.) 1941. Partial Index

- Alpha-Tocopherol Requirement of Rat for Reproduction in Female and Prevention of Muscular Dystrophy in Young. Marianne Goettlich and A. M. Pappenheimer, New York—p. 463.
- Utilization of Calcium of Cauliflower and Broccoli Margaret L. Fincke, Corvallis, Ore—p 477.
- Dietary Requirements for Fertility and Lactation. XXIX. Existence of New Dietary Factor Essential for Lactation. B. Sure, Fayetteville, Ark.—p 499.
- *Influence of Prenatal Diet on Mother and Child. J. H. Ebbs, F. F. Tisdall and W. A. Scott, Toronto, Canada—p 515.
- Thiamine, Nicotinic Acid, Riboflavin and Pantothenic Acid in Rye and Its Milled Products. A J. Ihde and H. A. Schuette, Madison, Wis.—p. 527.
- Nicotinic Acid Content of Meat and Meat Products J. M. McIntire, H A Waisman, L. M. Henderson and C. A. Elveljem, Madison, Wis—p 535.

Influence of Antepartum Diet.—Ebbs and his associates studied the antepartum diets of 380 women with low incomes. A group of 120 women found to be on a poor diet was left as a control, the diet of a group of 90 women on a poor diet was supplemented with milk, eggs, oranges, tomatoes and cheese during the last three or four months of pregnancy and the diet of 170 women on a moderately good antepartum diet was improved by education alone. The mothers on a good or a supplemented diet enjoyed better health, had fewer complications during pregnancy and proved better obstetric risks than those on a poor diet. Miscarriage, stillbirth and premature birth as the result of the pregnancy of the women on poor diets were more frequent, and the incidence of death and of illness among their babies up to the age of 6 months was many times greater.

Minnesota Medicine, St. Paul

24:901-1020 (Nov.) 1941

- Role of Tonsils and Adenoids in Respiratory Infections in Children. A. D. Kaiser, Rochester, N. Y.—p. 919.
- *Apparent Spread of Poliomyelitis Through Four Families. J. E. Perkins, Albany, N. Y.—p. 924.
- Craniocerebral Injuries. W. P. Ritchie, St. Paul.—p. 935.
- Treatment of Common Eye Injuries. A. D. McCannel, Minot, N. D.—p. 939.
- Injuries to Soft Tissues of Neck. T. J. Kinsella, Minneapolis.—p. 942.
- Penetrating Wounds of Abdomen. G. I. Badeaux, Brainerd.—p. 944.
- Physical Examinations in Industry. E. V. Goltz, St. Paul.—p. 948.

Poliomyelitis.—In order to add to the available data on the transmission of poliomyelitis Perkins reports its apparent radial spread in 1930 by four rural households in the southwestern corner of Minnesota. There were a total of 166 patients, with involvement ranging from fatal paralysis to involvement which merely produced pain on anterior flexion of the neck. Concerning 53 of the 166 patients investigated a history of exposure within thirty days of illness to another patient, acutely paralyzed or nonparalyzed, was obtained. Among the 878 household members of the 166 patients with paralytic and nonparalytic poliomyelitis 174 had illnesses classified as suggestive (producing systemic symptoms similar to those of patients with a diagnosis of poliomyelitis but with no evidence of involvement of the nervous system). Some additional illnesses may have occurred subsequent to the author's last visit. No one suggestive symptom exceeded 50 per cent, but a total of 82 per cent of the patients had headache, fever, diarrhea and/or vomiting. Headache was always combined with one or more of the suggestive symptoms. There was a similarity in the age distribution among the patients with definite and suggestive illnesses. The rate of attack of definite disease was higher for males than for females in all but the group aged 25 to 49. For the suggestive disease the reverse was true. If it is assumed that the illness of the patients with suggestive disease also was due to the poliomyelitis virus it may be hazarded that, although male patients experience involvement of the nervous system more frequently, female patients suffer a higher subclinical attack rate.

New York State Journal of Medicine, New York

41:2083-2178 (Nov. 1) 1941

- Recent Developments in Field of Laboratory Medicine. R. G. Stillman, New York.—p. 2107.
- Principles of Treatment of Epilepsy, with Particular Reference to Surgical Aspect. W. P. Van Wagenen, Rochester.—p. 2112.
- Oxycephaly. J. E. J. King, New York.—p. 2119.
- Chemotherapy of Pyogenic Meningitis with Sulfonamides. W. B. Weary and J. J. A. Lyons, Albany.—p. 2124.
- Health Program for Youth Organizations. J. G. F. Hiss, Syracuse.—p. 2132.
- Demonstration of a County 4-H Club Health Program. Evelyn F. H. Rogers, Oneonta.—p. 2134.
- The Physician's Role in a County 4-H Health Project. T. C. Monaco, Walton.—p. 2139.
- Medical Practice for Body and Mind. H. I. Gosline, Ossining.—p. 2141.

Public Health Reports, Washington, D. C.

56:2105-2144 (Oct. 31) 1941

- *Epidemiologic Study of Calcified Pulmonary Lesions in Ohio County. B. J. Olson, W. H. Wright and M. O. Nolan.—p. 2105.
- Description of Home Made Hydraulic Dredge Employed in Malaria Control at Perry, Fla. A. C. Newman.—p. 2127.

Epidemiologic Study of Calcified Pulmonary Lesions.—From the roentgenograms of 279 members of forty-four households Olson and his associates found that a high familial incidence (of 49.4 per cent among the 253 household members of whom adequate roentgenograms were had) of pulmonary calcification existed among these families, who resided in Ross County, Ohio. The selection of households was made through an index person, a pupil, found to have pulmonary calcification in the survey made by Lumsden and Dearing in three Ross County schools. Roentgenologically the calcification produces pulmonary lesions which simulate those of primary tuberculosis. Only 12, or 4.7 per cent, of the 253 household associates had a household

history of contact with tuberculosis. No relationship could be demonstrated between the contact and the pulmonary calcification. The possible etiologic part that *Ascaris* played in the calcification was neither proved nor disproved, as the incidence of parasites in the household members and in samples of soil near their homes was so similar for the persons with and for those without pulmonary calcification that no conclusion could be drawn.

56:2145-2188 (Nov. 7) 1941

- *Positive Agglutination Tests in Suspected Cases of Weil's Disease. A. Packchianian.—p. 2145.

Agglutination Tests and Weil's Disease.—During the last four years, using the microscopic agglutination test, Packchianian found agglutinins for type I *Leptospira icterohemorrhagiae* in the serum of 40 patients suspected of having Weil's disease. One patient resided in Connecticut, 4 in Louisiana, 9 in Maryland, 2 in Massachusetts, 2 in Michigan, 2 in Missouri, 1 in Nevada, 2 in New Jersey, 5 in New York, 4 in Ohio, 1 in Pennsylvania, 4 in Virginia, 2 in West Virginia and 1 in the District of Columbia. Thirty-six patients were men, 1 was a woman and 3 were children. The occupation or the place of residence of most of the patients was such that contact with wild rats might be expected. Six patients died. Sixty-one samples of blood from 36 patients were retested after storage in the refrigerator at 5 C. for one hundred and sixty-nine to one thousand and seventy-eight days and, with four exceptions, strong agglutination reactions with type I *L. icterohemorrhagiae* were obtained. The agglutination titers approached, or were identical with, the original titers. Blood samples from 20 jaundiced dogs (from Louisiana, Nebraska, New York, Pennsylvania and Virginia) likewise gave strong agglutination reactions in dilutions of 1:30,000 and higher. Virulent strains of *L. icterohemorrhagiae* were isolated from wild rats (*Rattus norvegicus*) captured in Detroit, in New York and in Washington, D. C.

Southwestern Medicine, El Paso, Texas

25:311-344 (Oct.) 1941

- Nutritional Enteritis. A. C. Reed, San Francisco.—p. 311.
- Biophysiologic Considerations in Treatment of Subcapital Fractures of Hip. F. H. Albee, New York.—p. 317.
- Effect of Electromagnetic Radiation on Flocculation Tests for Syphilis. E. L. Breazeale, Tucson, Ariz.—p. 321.
- Responsibility of the Medical Profession in the National Emergency. J. Dibble, Fort Sam Houston, Texas.—p. 326.

Virginia Medical Monthly, Richmond

68:621-680 (Nov.) 1941

- Organized Medicine and Public Welfare. W. B. Martin, Norfolk.—p. 622.
- Public Health Problems in Defense Area and Suggestions for Correction. A. G. Evans, Christiansburg.—p. 626.
- Surgical Correction of Neurofibromatosis (Plexiform Neuromas) About the Orbit. E. B. Spaeth, Philadelphia.—p. 630.
- Pylephlebitis. H. J. Warthen, Richmond.—p. 643.
- Outbreak of Botulism in Orange County. F. G. Scott Jr. and R. B. Mallett, Orange.—p. 646.
- The Common Cold. H. L. Harris, Richlands.—p. 649.
- Histologic Studies of Hypothalamus. H. Brick and E. H. Ingersoll, Richmond.—p. 652.
- Convulsions Associated with General Anesthesia: Report of Three Cases. S. Newman, Danville.—p. 655.
- Experiences with Paravertebral Block of Lumbar Sympathetic Trunk. B. W. Rawles Jr., Richmond.—p. 657.
- Blood Pressure in Relation to Age, Weight and Height: Analysis of 15,225 Blood Pressure Determinations. A. G. Schnurman, Radford.—p. 660.

West Virginia Medical Journal, Charleston

37:481-528 (Nov.) 1941

- Sudden Death. J. L. Wade, Parkersburg.—p. 481.
- Conservative Use of Posterior Pituitary Solution in Labor. H. E. Baum, Charleston.—p. 487.
- Evaluation of Human Immune Globulin in Measles. J. Basman, Charleston.—p. 491.
- Opportunities Presented to the Physician in the Field of Industrial Hygiene. P. A. Neal, Charleston.—p. 495.
- Finger Injuries. C. B. [unclear], [unclear].—p. 499.
- Dust and Gases Found: [unclear], Bethesda, Md.—p. 503.
- Medicine in Music. W. R. Wiant, Charleston.—p. 508.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

53:269-298 (Oct.) 1941

Endocrine Factors in Acne Vulgaris. E. L. Cohen.—p. 269.
Possible Case of Kaposi's Sarcoma. A. A. M. Nicol and H. A. Cookson.—p. 283.

British Journal of Ophthalmology, London

25:461-508 (Oct.) 1941

Inherited Optic Atrophy with Dominant Transmission and Early Onset. J. G. Scott.—p. 461.
Histologic Interpretation of Appearances in Fundus Oculi: Scheme for Methodical Investigation. A. J. Ballantyne.—p. 480.
Boeck's Sarcoidosis: Case. E. V. Srinivasan.—p. 493.

Journal of Laryngology and Otology, London

56:277-312 (Aug.) 1941

*Relationship Between Diseases of Upper Respiratory Passages and Surgery of Chest. F. C. Ormerod.—p. 277.
Transanal Approach to Ethmoidal and Sphenoidal Sinuses: Some Further Considerations. J. B. Horgan.—p. 290.

Respiratory Disease and Chest Surgery.—Ormerod assessed the part that disease of the upper respiratory tract had in the condition of 40 patients with bronchiectasis. Eighteen of the patients had no demonstrable lesion in the upper air passages though 3 had had tonsillectomies many years before. The other 22 showed some inflammatory lesion in the nose, the paranasal sinuses, the postnasal space or the pharynx. Fourteen of these 22 had had operations on the nose or the throat. Data show that about 80 per cent of patients with bronchiectasis have some degree of infection of the paranasal sinuses but that disease of the tonsils is of slight etiologic importance. About 20 per cent or more of the patients with pulmonary abscesses had tonsillectomies, and a few had other operations on the upper part of the respiratory tract but sinusitis did not appear responsible for the pulmonary abscesses. The connection between the upper and the lower respiratory tract may be by aspiration, lymph stream, blood stream and direct continuity. The aspiration theory seems to be the most probable. Bronchitis and its sequelae may explain many cases of bronchiectasis though probably not pulmonary abscesses. The foci of disease of the upper respiratory tract should be eliminated before the secondary chronic inflammatory lesions of the lungs are dealt with if a lasting cure is to be obtained and constant reinfection avoided. Sinuses should be drained, polyps removed and severe septal deflections corrected before operation on the chest. In children, with profuse purulent secretion, tonsils and adenoids can be removed with ease and safety after the chest has been treated. However, the nose and throat should be cleared of infected lymphoid tissue before the child leaves the hospital.

Medical Journal of Australia, Sydney

2:405-436 (Oct. 11) 1941

Observations on Effect of Treating Spores of *Bacillus Subtilis* in Perchloroethylene Under Various Conditions; and on New Method of Sterilizing Surgical Catgut. T. H. Small.—p. 407.
Management of Posterior Position of Occiput in Relation to Shape of Pelvis. T. D. Hughes.—p. 414.
Note on Use of De Laval Separator in Preparation of Human Serum. H. B. Rudduck, Marjorie Bick and Margaret Henderson.—p. 416.
Patency of Ductus Arteriosus in Adults. H. F. Bettinger.—p. 418.

2:437-464 (Oct. 18) 1941

Industrial Fatigue. H. M. L. Murray.—p. 437.
Control of Heat Loss, with Special Reference to Blankets, Clothing, Exposure and Resuscitation. C. E. Corlette.—p. 441.
Blood Pressure Changes Following Localized Myocardial Death. T. E. Lowe.—p. 447.
Interaction Between Anti A Agglutinins in Group B Serum and Receptor Substances in Group A Serum. Lucy M. Bryce and Rachel Jakobowicz.—p. 451.
Investigation of Fungus Infection of Foot in Military Camp. L. W. Linn and F. R. Magarey.—p. 452.

Tubercle, London

22:183-206 (Aug.) 1941

Infection in Artificial Pneumothorax. F. A. H. Simmonds.—p. 183.

Gastroenterologia, Basel

66:57-120 (No. 2) 1941

Effect of Histamine on Galactose Elimination in Human Subjects After Galactose Tolerance Test. J. Rein.—p. 57.
*Chronic Pancreatitis, with Hyperfunction of Islands of Langerhans. J. W. Grott.—p. 72.
Clinical Aspects of Diverticulum of Duodenojejunal Flexure. W. Schoen.—p. 90.

Chronic Pancreatitis, with Islet Hyperfunction.—Grott reviews observations on 42 cases of chronic pancreatitis in which hyperinsulinism was indicated by low or flat blood sugar curves after tolerance tests with 50 Gm. of dextrose. The starting point of the diagnosis was the physical exploration of the pancreas by the author's method. The patients often complained of general lassitude, sleepiness, increased nervousness and, in rare cases, symptoms of severe hypoglycemia. The physical examination disclosed hypersensitivity in 46 per cent, trophic changes of the skin in 69.5 per cent, pain sensitivity of the pancreas in 97.6 per cent and enlargement of the pancreas in 28.57 per cent. The diastase of the urine was increased in 40 per cent and renal diabetes existed in 45.2 per cent. The author concludes that chronic pancreatitis with hyperfunction of the islands of Langerhans is not a rarity and demands special treatment. Sugar and sweets must be avoided, because they are too rapidly absorbed and stimulate the islands to hyperfunction. If the patients are undernourished, the diet must provide liberal amounts of easily digested fats and proteins. In obese persons, however, the intake of carbohydrates and fats must be restricted. Meals should be frequent but not large.

Zeitschrift für Orthopädie, Stuttgart

71:1-128 (May 31) 1940. Partial Index

Results of Treatment of Congenital Dislocation of Hip Joint. F. Schede.—p. 3.
Bone Pegging in Malacias of Upper End of Femur. C. Springer.—p. 67.
Obstetric Traumatic Detachment of Epiphysis of Upper End of Femur Shaft, a Typical Entity and Its Differentiation from Congenital Dislocation of Hip Joint. E. Ruschenburg.—p. 81.
*Sex Ratio in Congenital Clubfoot. C. Mau.—p. 94.

Sex Ratio in Congenital Clubfoot.—Mau presents a collection of domestic and foreign statistics on clubfoot which includes 27,843 cases and shows that 66.59 per cent of the patients are male and 33.41 per cent are female. This 2:1 sex ratio of congenital clubfoot remains constant (in space as well as time). Research on twins shows that the probability of manifestation is comparatively slight but that it affects twice as many males as it does females. It is to be assumed that the abnormal sex ratio is not produced by the anlage that is at the basis of the defect but is connected with peculiarities of gene manifestation. The immutability of the sex ratio of congenital clubfoot suggests sex-linked modifiers which influence the manifestation of clubfoot constantly in the ratio of 2:1 without being themselves subject to manifestation fluctuations.

Bulletin of the Naval Medical Association, Tokyo

30:397-482 (July) 1941. Partial Index

*Observations on the Management of War Injuries to the Genitourinary Organs. Y. Nakauchi.—p. 397.

War Injuries of Genitourinary Organs.—Nakauchi analyzed 51 cases of war injuries of the genitourinary organs sustained by the navy crew during the early part of the Chinese war. Of the total patients treated, injuries of the lower urinary tract and the external genitalia were found in 24 (47.1 per cent); of the upper urinary tract, including the kidneys, in 18 (35.3 per cent), and of the urinary bladder in 9 (17.8 per cent). No patient with injuries to the ureters was encountered. The mortality depends on the extent of complications, particularly those of the gastrointestinal tract; in the presence of complications the primary treatment should be directed to them. Unless the renal injury is associated with extensive destruction with hemorrhage, treatment should be conservative. Involvement of the ureter is relatively infrequent but difficult to diagnose; treatment of this condition consists in the establishment of an adequate urinary flow. Injury to the bladder is by far the most important condition which demands a rational management, and the necessity of free urinary excretion and defecation cannot be overemphasized as an essential phase of effective

treatment. The most common type of damage encountered was injury to the lower part of the urethra and the external genitalia; the important point in the treatment of such injury is to avoid the possibility of deformity following complete cure of the initial injury.

Okayama-Igakkai-Zasshi, Okayama

53:1179-1330 (June) 1941. Partial Index

*Influence of High Pressure on Erythrocyte Count and Hemoglobin. K. Okuda and N. Sato.—p. 1299.

*Observations on Machine-Oil Acne. S. Suga.—p. 1305.

Erythrocytes Under High Pressure.—Okuda and Sato studied the effect of high pressure on the erythrocyte count and hemoglobin content of 5 healthy men and 4 women divers. The pressure within the tank in which the observations were made was gradually raised to 2 atmospheres, the process of raising or lowering the pressure requiring about thirty minutes. The subjects remained in this tank under high pressure for thirty to sixty minutes; blood examinations, for control determinations, were made just before they entered the tank and again just before the pressure was lowered. In both groups of blood determinations the red cell count showed an average decrease (7.6 per cent in the men and 9.8 per cent in the women), and the hemoglobin values also decreased (3.4 per cent in the men and 5.2 per cent in the women). Thus it is apparent that no significant difference exists in the reduction of either the erythrocyte count or the hemoglobin content under the conditions of these experiments.

Machine Oil Acne.—Suga reports his observations on 12 patients with occupational acne, all of whom were industrial workers who were in constant contact with machine oil. With the exception of 3 women 28, 24 and 19 years of age the condition occurred in young men under 20. The interval of time in which the disease appeared varied from two months to two years, but in the majority of the patients the condition began to manifest itself within four months. Histologically the most conspicuous pathologic change was the keratinization of the epidermis, associated with plugging and swelling of hair follicles due to the development of hornified substances and extensive cellular infiltration around the follicles. Two varieties of occupational acne must be distinguished: (1) the most common form, characterized by the formation of hornified plugs, the amputation of lanugo hairs, lesions inseparable from acne vulgaris, keratinizing acne and pigmentation and crater-like depressions of the skin and seen on the most exposed parts of the body, and (2) the allergic form, typified by lesions on the sites usual in acne vulgaris (the face, back and chest), where the acne lesions are complicated by pustules, large comedos, atheroma and granular scars. This latter form represents the sensitization of the skin to machine oil.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

81:1230-1276 (June 10) 1941. Partial Index

*Tropical Hay Fever. F. H. Ter Heege.—p. 1231.

Tropical Hay Fever.—Ter Heege discusses the various types of pollen and shows that wind-borne pollens are chiefly responsible for hay fever. This report deals chiefly with tropical hay fever in the Netherlands East Indies, particularly Java. The symptoms of tropical hay fever are much like those of hay fever in the temperate zone. The author describes 8 cases of tropical hay fever in which cutaneous tests were made with pollen or pollen extracts of *Zea mays* (corn), *Sorghum andropogon*, coffee and tobacco. Two patients showed a seasonal rhinitis recurring every year, especially during the dry period. For these patients only tests with pollen were made. In the other patients, the hay fever showed an irregular course, and for this reason they were given cutaneous tests not only with pollen but with inhalation and food allergens. These patients showed a multiple allergy. Hay fever in the tropics is often nonseasonal not only because of the irregularity of the pollination periods but on account of multiple allergy. The skin tests for allergens other than pollen are more important in tropical than in nontropical hay fever. With regard to the injection treatment of tropical hay fever, the author says that seasonal as well as nonseasonal treatment can be used, depending on the individual case history.

Nordisk Medicin, Stockholm

11:2737-2796 (Sept. 27) 1941. Partial Index

Motility and Secretion of Stomach After Operation for Ulcer. J. P. Strömbeck.—p. 2737.

Hospitalstidende

*Hereditary Hemorrhagic Telangiectasis (Rendu-Osler) with Genealogic Table: Case. F. Raaschou.—p. 2743.
Hemolysis after Blood Transfusion with Compatible Blood. A. B. Hansen.—p. 2745.

Hereditary Hemorrhagic Telangiectasis.—Raaschou reports on a woman aged 46 who began at 15 to have nosebleeds, which after 35 became aggravated in frequency and intensity. It is affected by effort, trauma, seasonal changes, the menses and the state of mind. During the last five years, the author says, multiple telangiectases have appeared on the tongue, lips and hands. Severe secondary anemia has occurred several times. During a more severe anemia, in 1936 thrombopenia was established. The blood picture at present is normal, apart from a slightly lowered hemoglobin percentage; the bleeding time, according to Duke's method, is six minutes. Histologic examination of a hemangioma from the hand, of the size of a millet seed, showed a regular, strongly keratinizing covering plate epithelium of several layers and with normal structure; in the stratum papillare a number of empty lumens with endothelial lining were seen. At least eight of seventeen members of the family in the last four generations have had hemorrhagic telangiectasis. It appears in both sexes, with simple dominant inheritance. It is incurable, but the prognosis with regard to life is good.

Hygiea

*"Allergic" and "Allergizing" Rheumatic Diseases. G. Kahlmeter.—p. 2759.

*Diagnostic Significance of Basophil Leukocytes. H. Holmgren and G. Wohlfart.—p. 2771.

Tetany in Sprue Treated with Vitamin D in Intramuscular Injections. H. Hult.—p. 2774.

"Allergic" and "Allergizing" Rheumatic Diseases.—Kahlmeter designates acute rheumatism and chronic polyarthritis as probably "allergizing," not "allergic," disorders and on the basis of 115 cases describes three forms of "allergic" rheumatism: 1. Allergic polyarthritis or polytendinitis (75 instances, 55 in women) is, he says, characterized by transient edema, with sometimes intra-articular, sometimes intratendovaginal and sometimes periarticular localization, occurring at varying intervals and as a rule with short duration in each localization. The seat of the edema changes capriciously during the course of an attack. Between the attacks the patient is free from symptoms. Often other allergic symptoms are present, such as urticaria, Quincke's edema, asthma and migraine. 2. In intermittent or paroxysmal neuralgias with vasomotor symptoms (17 instances, 14 in women) there are attacks of sharp pain, localized in the cervical and in the brachial plexus, lasting from some hours to two days at the most, accompanied by paresthesias, vasoconstriction or diffuse edema and returning after variable intervals during which the patient feels perfectly well. These neuralgias are remarkably like attacks of migraine in duration and spacing and also in the effect of variations in meteorologic conditions, the psychic state and so on. As in group 1, other allergic symptoms may be present, such as migraine (in about half of the cases), urticaria and asthma. 3. Hydrops intermittens (23 instances in 10,000 cases of arthritis, 10 in women) is in its typical form a rare disorder. The attacks occur at regular intervals with regular duration and affect the same articulations. In all but 1 of the author's cases one or both knee joints were affected; in 3 cases the right and the left knee were affected alternately for a long time.

Diagnostic Significance of Basophil Leukocytes.—Holmgren and Wohlfart studied the number of basophil leukocytes in patients with different disorders by means of a specific staining method. They state that the number of mast cells seems to have diagnostic and sometimes perhaps prognostic significance. In chronic myeloid leukemia the mast cell count is almost regularly increased. In 5 cases 10 per cent or more was established. A mast cell value of from 4 to 5 per cent is almost pathognomonic for myeloid leukemia. In polycythemia there is a tendency to a slight increase in the number of mast cells, and during recent years transitions from polycythemia vera to myeloid leukemia have been noted.

Book Notices

Insect Pests. By Wm. Clunle Harvey, M.D., D.P.H., M.R.San.I., Medical Officer of Health, Borough of Southgate, and Harry Hill, M.R.San.I., A.M.I.S.E., M.S.I.A., Sanitary Inspector, Borough of Southgate. Cloth. Price, \$4.25. Pp. 292, with 23 illustrations. Brooklyn: Chemical Publishing Company, Inc., 1941.

The control of insect pests is a problem which merits serious consideration at any time, but the present troubled international situation with its resulting altered living conditions and its movement of fighting and civilian forces has precipitated even closer attention to the problem. This volume is especially useful in that it presents the necessary practical considerations in hand-book form. Although the manuscript was written in England, the subject matter is discussed in terms which are applicable to any country. Unnecessary detail is omitted, the authors having confined their remarks to the essentials required by the average department for insect control. Of the fourteen chapters in the volume, five relate to specific insect pests: general outlines of insect control, the bedbug, the flea, the louse and other insect pests. The last mentioned chapter discusses the cockroach, its relation to disease, habits, dissemination and control, the cricket, the silver-fish, the ant, the itch mite, psocids, the earwig, woodlice and the house fly. The remaining chapters deal with the principles and practice of disinfestation: building construction and infestation, gaseous fumigants, the technic of fumigation, insect control and educational measures, legislative control, human toxicology, disinfestation of foodstuffs and disinfestation of ships. The chapter on human toxicology discusses only hydrogen cyanide. The volume also has two appendices, one presenting forms and records, the other specimen propaganda leaflets. The index is adequate for the contents of the book. Written in a style which permits easy and fast reading, the present volume should have a useful place as adjunct reading for all who are interested in the control of insect pests and in the prevention of disease. As the book is concerned only with insect pests commonly encountered around human dwellings, the reader must not expect to find discourses on special problems such as mosquito control.

Developmental Diagnosis: Normal and Abnormal Child Development. Clinical Methods and Practical Applications. By Arnold Gesell, M.D., and Catherine S. Amatruda, M.D. Cloth. Price, \$6.50. Pp. 447, with illustrations. New York & London: Paul B. Hoeber, Inc., 1941.

This book aims to make the researches in normal mental growth during the first five years carried on over a period of twenty years at Yale University available and clinically useful to the pediatrician and the family physician. Numerous publications by Dr. Gesell and his co-workers have already recorded his extensive investigations into normal development of the young child, but this book summarizes and correlates the material for the clinician. The first part of the book offers a general survey of the early development of the child, including the norms of development up to the age of 3 years. The nature and conduct of the developmental examination of the young child are discussed. This first part of the book gives the substance of the authors' studies of the normal infant.

The second part of the book deals with defects and deviations of development. This is a most valuable section, which will be appreciated by physicians who tend to be baffled by problems of mental retardation. Differential diagnosis, in terms of the authors' use of the developmental quotient, is succinctly dealt with, and an etiologic classification of developmental defects and deviations is offered. Mental retardation, endocrine and convulsive disorders are discussed diagnostically. A chapter on special sensory handicaps is particularly informative. A discussion of clinical aspects of child adoption presents an excellent point of view with which all physicians should be familiar.

The final section, on protection of early child development, considers the use which the authors' diagnostic studies may be put to in furthering the proper early supervision of children and in guidance toward healthy physical and mental development. It is recommended that all medical students and youthful physicians read the small section entitled "Imparting a Diagnosis" (p. 312). Here some important mental health considerations in dealing with retarded children are stressed. Several appendices

give much detail of examination technic, charts showing growth trends, equipment required for developmental diagnosis and information on cinematic case studies.

This book may be warmly recommended to pediatricians and physicians. It offers comprehensive and well organized information about infants and children. The authors state specifically that they are chiefly concerned with the maturity and organization of the neuromotor system; with developmental neurology. This approach, most useful as it is, results in less emphasis on some psychologically and psychiatrically important aspects of child development. The intense focusing of interest on the conduct of the infant is not paralleled or supplemented by equally full consideration of his primary relationships with the mother and other members of the family. These considerations are not neglected in the book but are not sufficiently brought into focus to give as fully rounded a picture of the early development of the child as the rich material of the book might permit.

A word of caution also is in order. It would be easy to gain the impression that the use of the developmental schedules and the conduct of the developmental examination is a simple matter and that any physician without particular preparation might apply them in his office practice. As a matter of fact, if authentic use of Dr. Gesell's developmental norms is to be made, the physician should be carefully schooled and practiced in the conduct of the examination, and the greatest care and meticulousness exercised. Successful use of the examination, particularly for prognostic purposes, requires closest attention to very minor deviations in the infant's responses. The use of the refined tool Dr. Gesell has developed calls for skill and precision, and therefore training in its use. The volume is well printed, the language throughout is clear, simple and concise, and there are abundant photo tracings.

The United States of America, Appellants, vs. The American Medical Association, A Corporation; The Medical Society of the District of Columbia, A Corporation: The Harris County Medical Society, An Association, et al., Appellees. (A Reprint of the Official Documents with a Condensation of the Trial.) Cloth. Price, \$5. Pp. 532, with illustrations. Chicago: American Medical Association, 1941.

This volume, bound in a durable green cover, contains a complete chronological review of the several steps in the criminal action instituted by the United States against the American Medical Association, the Medical Society of the District of Columbia, the Washington Academy of Surgery, the Harris County, Texas, Medical Society and twenty-one individual defendants, an action in which the defendants were charged with conspiring to violate the Sherman Antitrust Act in that they allegedly conspired unlawfully to interfere with Group Health Association, Inc., of the District of Columbia. The material contained in the book, all of which was previously published in *THE JOURNAL*, is presented in three groupings. In the first grouping, dealing with events occurring before the trial, will be found a verbatim copy of the statement released by Thurman Arnold, Assistant United States Attorney General, on Sunday, July 31, 1938, in which a grand jury investigation of the medical profession was forecast. This statement prompted widespread newspaper editorial comment, and following the Arnold statement in the book are reproduced many of such leading editorials. On October 17, 1938 a grand jury in the District of Columbia was impaneled, and an indictment was returned against all of the defendants on December 20 of that year. A copy of this indictment is reproduced on page xxiii. Beginning on page xxix is a chronological record of the events leading up to the indictment, followed by the opinion of Justice Proctor declaring the indictment invalid, the opinion of the United States Court of Appeals for the District of Columbia overruling Justice Proctor and reference to the ruling of the United States Supreme Court, in which a petition for a writ of certiorari filed by the defendants to review the action of the Court of Appeals was denied. Interspersed among the official documents are many pages of editorials from *THE JOURNAL*, newspaper editorials and cartoons, and photographs of the individual defendants and the attorneys for the government and for the defendants. On Wednesday, Feb. 5, 1941 the case came to trial on its merits and the second part of this book consists of a transcript of the record in the case, including the opening statements of counsel, the testimony of witnesses both for the government and for the defendants, copies of all motions made

and of the court rulings thereon, the closing arguments of counsel and the instructions given by the court to the jury. The third grouping comprises references to the verdict of the jury, in which the American Medical Association and the Medical Society of the District of Columbia were found guilty and the other defendants not guilty. The book ends with a report of the Board of Trustees to the House of Delegates, in which the Board recommended that counsel for the Association be directed to appeal the judgment that was rendered against the Association. The House of Delegates, without a dissenting vote, approved the report. Within the covers of this book, therefore, will be found a complete picture of the controversy extending over a period of more than three years. In no other place can the important happenings in this important case be found in so accessible a form. Many critical questions relating to the future of medicine in the United States are dependent for answers on the final judgment yet to be rendered in this case, questions that may affect the private practice of each and every physician and of each and every other professional man. Scattered through this book will be found set forth these questions with the answers suggested by the government and the answers suggested on behalf of the medical profession. The Supreme Court of the United States will undoubtedly be afforded an opportunity to say which answers are correct. The importance of the issues involved have prompted the publication of the book, and it should be in every physician's library. It should be available in every public library and in the library of every attorney or other professional man who is concerned with what the future may hold in store for the professions.

The Intervertebral Disc with Special Reference to Rupture of the Annulus Fibrosus with Herniation of the Nucleus Pulposus. By F. Keith Bradford, M.D., and R. Glen Spurling, M.D. Cloth. Price, \$4. Pp. 158, with 45 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

The amount of literature on the intervertebral disk and the nucleus pulposus has increased so tremendously during the past decade, and the diagnostic procedures and methods of therapy have varied so significantly, that the broad point of view of the authors in this monograph is extremely welcome. The embryology, anatomy, physiology and pathology are thoroughly described. The symptomatology, diagnosis and differential diagnosis and diagnostic methods are discussed in detail. In reviewing the literature the authors emphasize those conditions which are described and presented with a proved pathologic basis, while certain reports are mentioned but not accepted at face value. Phenomena which have been observed repeatedly have been given acceptance without known satisfactory explanation.

The authors stress the fact that the diagnosis of rupture of the annulus fibrosus with posterolateral herniation of the nucleus pulposus must not be undertaken lightly and that familiarity with other pathologic conditions with similar appearance is necessary. The description of the methodical clinical, roentgenologic and laboratory examination of patients with low back and sciatic pain bears favorable comment. The roentgenograms help to exclude lesions other than those due to pathologic conditions of the disk. The use of iodized oil is indicated only when the diagnosis cannot be made without it.

While it is true the presumptive clinical diagnosis of herniated nucleus pulposus can be made on the basis of back pain, with persistent or remitting sciatic pain and a positive sciatic nerve stretching test and hypesthesia and well localized paresthesia, or causalgia in the lateral aspect of the leg or in the foot, the differential diagnosis must be made from primary or metastatic neoplasm of the spine, cauda equina tumor, neoplasm of the prostate, rectum or pelvic viscera, spinal injury or anomaly, narrowing of the intervertebral foramina from other causes, hypertrophy of the ligamentum flavum, spondylolisthesis, syphilis, sciatic nerve injury, abscess secondary to bone suppuration, neurofibroma, peripheral tumor, herpes zoster, sciatic pain following gluteal injections, hypertrophic arthritis, aneurysm of the iliac or popliteal artery, glomus tumor, vascular disease and polyneuritis.

The authors emphasize the fact that low back disability from intervertebral disease without root pain is almost always an orthopedic problem. Conservative measures should be used in

all acute cases. Laminectomy is indicated without contrast myelography if the symptoms persist and the subjective and objective appearances are characteristic. The technic of laminectomy at the various levels is described in detail. The post-operative care and end results are discussed. There is a short chapter on cervical and thoracic herniations and another chapter which includes some selected case reports.

This timely book is conservatively written and well illustrated. It has a fairly complete bibliography. It should be welcomed by all those who see or treat back pain and "sciatica," be they general practitioners, neurologists, neurosurgeons or orthopedic surgeons.

Arthritis in Modern Practice: The Diagnosis and Management of Rheumatic and Allied Conditions. By Otto Steinbrocker, B.S., M.D., Assistant Attending Physician and Chief, Arthritis Clinic, Bellevue Hospital, Fourth Medical Division, New York City. With Chapters on Painful Feet, Posture and Exercises, Splints and Supports, Manipulative Treatment and Operations and Surgical Procedures. By John G. Kuhns, A.B., M.D., F.A.C.S., Chief of the Orthopedic and Surgical Service, Robert Breck Brigham Hospital, Boston. Cloth. Price, \$8. Pp. 606, with 321 illustrations. Philadelphia & London: W. B. Saunders Company, 1941.

This most recent of the monographs on arthritis is designed to embody in concise and practical form the commonly accepted diagnostic and therapeutic measures which are proving useful for arthritis but which are too new to have found a place in the textbooks. A good deal of judgment in employing any of them, as the author himself points out, is necessary, and, in the main, Dr. Steinbrocker has chosen well. Nevertheless, some procedures of a highly questionable nature have crept in, such as the recommendation for high colonic irrigation every two to four weeks. The chapter on local and regional analgesic injections is especially interesting. It is probable that the author goes further in his belief in the usefulness of such measures than do most workers in the field, but it is certainly a subject which deserves careful investigation. Analgesic injections are not without risk, however, and should be indulged in only by those who are thoroughly qualified by special study and training. The last five chapters of the book are written by Dr. J. G. Kuhns and deal with painful feet, posture and exercises, splints and supports, manipulative treatment, and operations and surgical procedures. These contain much practical information. The chapter on posture and exercises opens with a discussion on methods of grading posture and includes a reproduction of the Harvard chart of body mechanics, which grades posture on the basis of the silhouette. Although the chart is widely used, this method of grading is based largely on the degree of lordosis, and the entire question of lordosis in its relations to posture and "body mechanics" probably deserves complete reevaluation. In the way of minor criticisms, the references given at the end of each chapter are not readily legible because of the indentions; there are also some names misspelled in the bibliography. In spite of minor criticisms, this is a useful book and should serve as considerable assistance to physicians in the management of patients with the various common forms of arthritis.

America's Housekeeping Book. Compiled by New York Herald Tribune Home Institute. Cloth. Price, \$2.50. Pp. 607, with illustrations. New York: Charles Scribner's Sons, 1941.

The vast amount of material collected by the New York Herald Tribune Home Institute is here made available in book form. Every housewife can find here innumerable useful hints on laundering, housecleaning, money management, repairing, operation and maintenance of the home, painting and, in fact, everything except cooking. The book, therefore, forms an essential companion book to the cook book in every kitchen.

Nobel Prize Winners: Charts—Indexes—Sketches. Compiled by Flora Kaplan. Second edition. Cloth. Price, \$2.50. Pp. 144, with portrait. Chicago: Nobelle Publishing Company, 1941.

This is the second revised edition of a previous publication by the same author. Her first edition was sent to the Nobel Prize Foundation at Stockholm, Sweden, which made the necessary corrections and revisions. The present edition bears the marks of this improvement. The book is a most complete collection of biographic sketches and other information anywhere available on the recipients of the Nobel prize.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FRACTURES, TRAUMA AND GLYCOSURIA

To the Editor:—Shortly after a patient has suffered a fracture, he may show a slight glycosuria. Can you offer any explanation for this condition, and can you state whether or not my observation is consistent with that of others? N. H. Farrell, M.D., American Falls, Idaho.

ANSWER.—Glycosuria frequently is found after a fracture. This observation rarely has any serious or medicolegal importance. What must be excluded, of course, is the presence of diabetes.

It has never been proved that ordinary trauma can cause diabetes mellitus. It is conceivable that the pancreas itself could be traumatized to such a degree as to produce diabetes, but actual instances are extremely rare. On the contrary, there are many instances in which severe trauma to the pancreas, with or without acute pancreatitis, has not produced diabetes mellitus.

There are several points worth mentioning: 1. Trauma often produces glycosuria, but this does not necessarily mean diabetes mellitus. It does mean that the diagnosis of diabetes mellitus must be excluded. 2. Trauma, either physical or psychic, may cause latent diabetes to be readily apparent. There are numerous instances in which a mild or latent diabetes is made severe by a fracture, an automobile accident or a sudden death in the family. 3. Trauma may increase the severity of diabetes. Herbert Pollack (The Influence of Bone Fracture on Insulin Requirements in Diabetes Mellitus, *Proc. Staff Meet., Mayo Clin.* 8:423 [July 12] 1933) reported observations on 3 diabetic patients who sustained fractures. One of these patients may have had an undiagnosed fracture of the base of the skull. It should be mentioned that a fracture in this region may produce the diabetes described by Claude Bernard. 4. If trauma were responsible for the development of diabetes, then the extreme trauma produced by modern warfare should have caused an increase in the incidence of the disease among the combatants of the war of 1914 to 1918. Both E. P. Joslin (The Treatment of Diabetes Mellitus, ed. 6, Philadelphia, Lea & Febiger, 1937) and R. M. Wilder (Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia, W. B. Saunders Company, 1940) recorded that this was not the case; more cases of diabetes were found among noncombatants than among combatants.

SOLUTIONS OF SODIUM SULFATHIAZOLE IN NOSE

To the Editor:—Recently there was an article in *The Journal*, April 26, 1941, page 1899, on the successful treatment of sinusitis with nasal sprays of 5 per cent solution of sodium sulfathiazole. Before and since, there have been published positive statements that it should be used only intravenously, as any spilled outside the vein causes necrosis. In a personal conversation which I held with the head chemist of a large drug manufacturing company, the chemist stated positively that a solution of sulfathiazole exposed to light begins to decompose after forty-eight hours and becomes irritating as well as loses its chemotherapeutic effect. He stated that it is not safe to use intranasally as a spray after several days. If it is destructive to tissue, must it not destroy the delicate intranasal cilia when sprayed in? If the drug is so used continuously for some time, the most powerful protective function against infection of the nose would ultimately be destroyed, as in cases of *ozena* or advanced chronic atrophy. Has any research work been done to determine the effect of sulfathiazole on viable cilia?

A. C. Howe, M.D., Brooklyn.

ANSWER.—A 5 per cent solution in distilled water of sulfathiazole sodium sesquihydrate has a pH of between 10 and 11, and when such a solution is injected into the tissues it has a definitely irritating effect and under certain conditions will produce necrosis of the tissues with slough. However, when such a solution is used as a spray in the nose or the throat there is a rapid dilution of the original solution, together with a decrease in its alkalinity due to the buffering action of the nasal mucus and saliva, so that the chance of irritating effects being produced is decreased. When a 5 per cent solution is used as a spray at frequent intervals, patients may complain of a sensation of heat and burning in the area to which the spray of the solution of sodium sulfathiazole has been applied. Fletcher (*California & West. Med.* 55:94 [Aug.] 1941) has reported that necrosis of the lining of the maxillary sinus occurred after

irrigations of the sinus with solutions of sodium sulfathiazole for three weeks. Solutions of the sodium salt of sulfathiazole may decompose if exposed to light over several days. For this reason when sprays of sodium sulfathiazole solution are being employed the prescription should be written for a two days' supply in order that a decomposed solution is not used by the patient. As far as is known at present, there have been no studies conducted on the effect of sprays of sodium sulfathiazole on the cilia of the nasal passages. Certainly it would seem that injury might come to the cilia if highly alkaline solutions were employed, but it is possible (and this is solely a matter of opinion) that the dilution and buffering effects of the nasal mucus are such that the cilia are not affected. A final conclusion on this point cannot be reached at present because of the lack of experimental work. Until the results of such investigations are available, it would seem that a considerable degree of caution should be used in the application of alkaline solutions of sodium sulfathiazole to the nasal mucous membrane.

ARM AND LEG PAINS IN BOY

To the Editor:—About ten months ago a boy aged 8 years had nasal obstruction, frequent sneezing and vague aches and pains about the arms and legs. On examination, he was found to be 3 pounds (1.3 Kg.) underweight and exceptionally sensitive to ragweed pollen and to have mild secondary anemia. The heart and lungs were normal and the liver and spleen not enlarged. He was given specific therapy to combat the hay fever and anemia; at present he has gained 10 pounds (4.5 Kg.) and is free from the nasal allergy. However, the pains in the upper and lower extremities have become more intense, and sedation is required to make him comfortable. These pains come on when it is about to rain or snow. The boy is not affected by swimming in cold water or exposure to dry cold, but atmospheric changes seem to predispose to these attacks of pain. At no time have the joints or extremities been swollen, tender or limited in motion. The sedimentation rate is normal. The blood calcium content is 11 mg. per hundred cubic centimeters, the phosphorus 4.6 and the nonprotein nitrogen 37 mg. The blood pressure is 98 systolic and 68 diastolic. A roentgenogram of the long bones shows mild, diffuse osteoporosis. Repeated examinations of the urine have given negative results. The mother is fearful that the child has "rheumatism" which may eventually lead to crippling heart disease. What conditions would give pain in the extremities associated with atmospheric changes? What form of relief would you suggest? M.D., New York.

ANSWER.—This boy has a peculiar clinical picture and has already been well studied from a physical and laboratory standpoint. The following conditions come to mind, most of which have already been fairly well eliminated by the data presented: hyperparathyroidism, chronic polyarthritis (Still's disease), myalgia, growing pains, rheumatic fever, neurosis, neuritis (lead poisoning, beriberi), scurvy, muscular dystrophy, sickle cell anemia (if the patient is a Negro), myositis, trichinosis, and physical allergy.

The four most likely differentials would involve rheumatic fever, growing pains, physical allergy and neurosis.

Growing pains occur at the end of the day, especially during the night, and the pain is gone in the morning and usually does not recur during the day. They appear most commonly in the muscles of the legs and thighs, appear rarely in the upper extremities and are frequently worse in the summer, when children are more active. There are no objective signs or other evidence of rheumatic fever. The sedimentation rate, leukocyte count and hemoglobin content should be normal.

In patients with rheumatic fever the pain and stiffness occur when getting out of bed in the morning and during the entire day, especially on motion, often causing a limp. The patient feels better on getting warm in bed. The joints rather than the muscles are particularly involved in both the upper and the lower extremities. There are usually bouts of joint pains, nose-bleeds, cutaneous rashes, pallor and fever. There is almost always during the acute painful stage an increased sedimentation rate, some fever, some anemia and a mild increase in leukocytes.

Physical allergy must be considered, as the child mentioned is allergic. This particular group of symptoms has not been described, but it is conceivable that damp weather—increased humidity and low barometric pressure—could cause some sort of physical allergy resulting in muscular spasm and pain. It would be difficult to prove this. However, if epinephrine or ephedrine in proper doses relieved the symptoms the relief would be suggestive.

In a child of 8 years a neurosis must always be considered, the complaints being an attempt to attract attention or gain some end. However, other behavior difficulties would be present in a child poorly adjusted emotionally, and no mention is made of maladjustment in the history.

The osteoporosis of the long bones should be followed by occasional roentgenograms, as the child might have an incipient parathyroid disturbance.

BACTERIA AND SPIROCHETES IN THE STOMACH

To the Editor.—A white man aged 33 complains of morning nausea and gaseous eructation and anorexia. On examination of the gastric content 40 degrees of free acid was found and 50 degrees of total acid. This was thirty minutes after 7 per cent alcohol. It was noted that the gastric content had a foul odor and simulated that of fusospirochetal abscess. On examination of the gastric sediment numerous pus cells, particularly mononuclear cells, and a great many fusiform bacilli and spirochetes were found. I was unable to find any spirochetes in smears from the mouth or throat. Roentgen examination of the chest and stomach revealed no abnormalities. The patient was given 0.3 Gm. of neosarsphenamine twice weekly for four doses, and following this he has gained considerably in weight and feels better. There was a severe reaction after each injection. Now he is taking nothing, but the gastric content continues to have the same foul odor and the same findings in the sediment. I should like to know the frequency of such a finding and also the therapy.

M D, South Carolina.

ANSWER.—Fusiform bacilli and spirochetes may be found in the mouth and stomach contents of healthy persons. Large numbers of these organisms may also be found in the gastric contents of patients with achlorhydria, particularly in those with pernicious anemia (Dick). The significance of this finding is not known, but ulcerative lesions of the gastric mucosa are not commonly found in pernicious anemia.

Bacteria are swallowed almost constantly, including those from infections in the mouth and the respiratory tract. Examination of the gastric sediment may therefore be expected to disclose a large number and variety of bacteria, not infrequently including pathogenic organisms. Whether or not these bacteria remain viable for more than a few minutes is thought to depend almost entirely on the acidity of the gastric contents. In the presence of free acid (pH value of 3 or less) the stomach contents are bactericidal and when cultured are almost always sterile. In the acid secreting stomach there may normally be periods of hours each day when the gastric contents are not sufficiently acid to be bactericidal. If pathogenic bacteria are swallowed during such a period, it is conceivable that they might invade the gastric mucosa and subsequently give rise to an inflammatory lesion. The frequency of such an occurrence is not known. The available evidence would seem to indicate, however, that for some reason as yet not clearly understood the gastric mucosa is resistant to infection. With regard to the etiology of chronic nonspecific gastritis, Schindler states that practically nothing is known but "it seems that bacteriological factors play a minor role as compared with mechanical and chemical factors."

The cytology of the gastric contents has been studied by several investigators. The average cell count in the normal subjects studied by Mulrooney was found to be 232 per cubic millimeter: 16 per cent were leukocytes and 84 per cent were epithelial cells. In cases of gastritis an increase in the total cell count was found together with a relative increase in the leukocytes. The significance of leukocytes in the gastric contents would therefore seem to depend entirely on the number of leukocytes present.

In view of these considerations, additional information is necessary to evaluate the findings in the case cited and to institute appropriate therapy. Gastroscopy should readily disclose whether or not an ulcerative and suppurative gastric lesion is present. Cultures of the saliva should indicate whether fusiform bacilli and spirochetes are being swallowed and, if so, their relative number.

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EFFECT OF DRUGS ON INTESTINAL pH

To the Editor.—Are there any drugs, other than hydrochloric acid, which will tend to acidify the intestinal tract or at least reduce the alkalinity of it? Would sodium acid phosphate or ammonium chloride have the same effect on the gastrointestinal acidity as they do on the urinary acidity?

G. Perry Ross, M.D., Auburn, N. Y.

ANSWER.—The effect of various drugs on the reaction of intestinal contents (except in the duodenum) has not been thoroughly investigated. It is doubtful, however, that ammonium chloride, sodium acid phosphate, other acid salts or acids administered in therapeutically possible doses alter the pH of the intestinal contents long enough to be of practical significance. Certainly the effect is not comparable to that on the pH of urine. Dilution, neutralization and rapid absorption, among other factors, tend to prevent an appreciable concentration of such drugs in the bowel.

When the stomach secretes acid, considerable variation in the pH of intestinal contents may occur, although the reaction below the duodenum is usually alkaline to slightly acid, with a tendency for the contents to be alkaline lower in the bowel.

Whether the intestinal contents are constantly alkaline in the presence of achlorhydria is not definitely known. In view of the fact that a normal person has been estimated to secrete approximately 1,500 cc. of acid gastric juice daily, however, replacement therapy does not seem to be practical. Furthermore, there is no conclusive evidence to indicate that such therapy would be sufficiently beneficial to warrant its use.

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BODY SWELLINGS PRECIPITATED BY PRESSURE

To the Editor.—A married woman aged 32 has been complaining of constantly recurring itchy, at times red, welts over various parts of the body. They occurred at first just before menstruation but they occur now any time during the menstrual cycle. Pressure of some sort seems to be the provoking and precipitating cause. Thus a tight belt around the waist, pressure of strap of a golf bag over the shoulder, tight shoes across the dorsum of the foot, leaning a long time on the tips of the elbows or sitting a long time on a hard surface will cause the manifestation of a welt from 1 inch to 3 inches in diameter over the area of the body subjected to the pressure. There is a history of allergy in the family. Otherwise the history by systems, the past medical history and the family and social histories are negative. The blood Wassermann reaction is negative, a catheterized specimen of urine was negative on analysis, blood counts revealed mild secondary anemia. The basal metabolic rate was minus 12 and minus 18 per cent. The treatment consisted of large doses of calcium, thyroid, desensitization with histamine hydrochloride, administration of histaminase, large doses of vitamins, ephedrine and amylo, adrenal cortex extract and ascorbic acid. Is there any other form of treatment which might possibly be tried to help her? The condition has improved somewhat; that is, the welts are not so large, itchy and frequent as formerly, but much room for improvement remains.

M D, Milwaukee

ANSWER.—The diagnosis in this case is not at all clear. The fact that pressure precipitates the swellings leads to the diagnosis of physical allergy due to pressure, the treatment of which is unsatisfactory. Pressure should, of course, be avoided as much as possible. The fact that it occurs at menstruation would suggest some ovarian disorder. Possibly the patient is allergic to certain foods, and menstruation acts merely as a contributory factor. The patient should avoid for a trial period foods which commonly cause urticaria, such as fresh vegetables, fresh fruits, chocolate, tomatoes, peas, beans, fish, "cola" drinks, nuts and pork, including ham, bacon and lard.

THE CHEDIAC SERODIAGNOSTIC TEST FOR SYPHILIS

To the Editor.—A serodiagnostic test for syphilis described by Chediak of Habana has recently been brought to my attention. This is a micro-agglutination reaction based on the use of one drop of dried blood, and the result can be read within a few minutes. The method is extremely simple, and the author claims greater accuracy than is to be had with the Wassermann, Kahn, Meinicke and other tests. The advantages of such a simplified test for syphilis are obvious. Although seventy-five references are quoted by Chediak as appearing in the Cuban, Spanish, South American, French, German and Italian literature and regarding the use of his reaction, there is not one American or English article quoted on it. As facilities for investigating the literature at this station are nonexistent, I should like information on the accuracy and reliability of this reaction. It appears to me strange indeed that, if this test is accurate, physicians in the United States are really missing a simple and readily available test for syphilis.

Emil Granet, M.D., Lieut., M. C., U. S. N. R., Guantanamo Bay, Cuba

ANSWER.—It is apparently true that the Chediak microtest for syphilis has not been discussed in the medical literature of this country. The *Quarterly Cumulative Index Medicus* from 1936 on does not list any English references to the test, although it does list references in other languages. The reason is probably that serologists in this country prefer the use of serologic tests which have been evaluated by the American Evaluation Committee on Serodiagnostic Tests. It is understood that the Chediak reaction will be evaluated with other serologic methods in a forthcoming study to be conducted by the U. S. Public Health Service.

To secure the Chediak reaction, which is a modification of the Meinicke microreaction, a drop of defibrinated blood is permitted to dry on a slide. The dried drop is dissolved by a mixture of sodium chloride and sodium bicarbonate solution. An antigen similar to that of Meinicke is added: the slide is agitated for three minutes and is then placed in a moist chamber for thirty minutes. The results are read microscopically. A description of the Chediak reaction with a review of the literature is contained in a recent volume: *Vogelsang, T. M.: Sero-Diagnostic de la Syphilis*, Bergen, Norway, J. W. Eides Boktryckeri, 1940.

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CONGESTIVE HEART FAILURE

FACTORS INFLUENCING THE ULTIMATE PROGNOSIS

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ROCHESTER, MINN.

The immediate results of the treatment of congestive heart failure due to any cause often are very gratifying. This is especially true of the first break in cardiac compensation. Indeed, the ease with which an edematous patient may be rendered fluid free and the ease with which he is relieved of distressing symptoms by the appropriate use of effective diuretics may lead the patient readily into the mistaken belief that his disease has been cured and that presently he will be able to return to his former mode of living. As the mechanism responsible for congestive heart failure is in most cases an irreversible process with a strong potentiality to progression, it can be assumed safely that cardiac decompensation will recur sooner or later—certainly sooner rather than later if the patient is allowed to foster his conviction of having been restored to normal health by the treatment which has been dispensed to him.

It was with the idea of ascertaining, if possible, what factors, if any, might influence the course of patients whose hearts had been decompensated that this study was undertaken.

Data were procured through the clinical records or through follow-up letters on 150 patients who had received hospital care in the cardiac service for congestive heart failure. These cases, although they were not strictly consecutive, are not selected in any way and should represent a fair cross section of the cases from year to year. The measures employed for the restoration of cardiac function in these cases were essentially those which are recognized universally as the standard method of treatment. These consisted of the use of digitalis and diuretics (mercurial, "acid producing salts," so called, and the xanthine preparations) either individually or in combination, depending on the indications in the individual case, of restriction of fluid and salt and of outlining a protective regimen after the patient had become ambulatory. All patients were strongly urged to establish contact with their family physicians at an early date after their dismissal, so that recurrences of failure might be promptly treated.

ETIOLOGIC FACTORS

In 114 patients (76 per cent) cardiac decompensation was on the basis of hypertension and coronary disease either independently or in association with each other:

in 24 patients (16 per cent) the diagnosis was rheumatic heart disease (in 1 of these the diagnosis was Pick's disease); hyperthyroidism was present in 7 patients (4.7 per cent), in 3 in association with hypertension, and in 2 with coronary disease, and 1 patient had rheumatic mitral stenosis. In 3 patients syphilitic aortitis was regarded as the cause of the cardiac failure and in 2 patients the main underlying cause of decompensation was thought to be obesity, although both patients were within the arteriosclerotic age and coronary disease may have played an important part in the breakdown of their cardiac reserve.

Age Distribution.—The majority of patients were between the ages of 50 and 69 years, inclusive (table 1). The average age of the entire series of patients was 57.5 years.

Sex Distribution.—There were 106 men and 44 women, a ratio of about 5:2.

SUBSEQUENT COURSE

At the time when the survey was completed, 128 of the 150 patients had died and only 22 were living. With the aid of the Division of Biometry and Medical Statistics of the Mayo Clinic a survival curve was plotted (reproduced in the accompanying chart). The methods of calculating the necessary data followed the regular principles used in actuarial practice, since some of the patients were still alive at the conclusion of the study. This curve gives the expected number of persons out of 100 who will be living for consecutive years after the first episode of congestive failure. The chart indicates also, for comparison, the computed life expectancy curve for the normal population as well as that for patients who have had another serious disease, namely carcinoma of the stomach in which gastric resection had been carried out (that is, patients with carcinoma of the stomach who were considered to have had operable lesions). The descent of the curve not only is steep, indicating a heavy mortality from year to year, but also continues on practically a straight line, so that only 13 patients out of the original 100 can be expected to be alive at the end of nine years.

In order to determine what factors might have influenced the prognosis in the individual case of congestive heart failure, the records of this group of patients were analyzed, first, by comparing the data relative to those who lived five years or more after the first episode of heart failure with the data relative to those who died within five years after the onset of congestive heart failure; and, second, by a detailed study of the records of those patients who were still alive at the completion of the survey. In this group it was possible to ascertain data not always available among those who had died.

COMPARISON OF DATA RELATIVE TO PATIENTS WHO
LIVED FIVE YEARS OR MORE WITH DATA ON
THOSE WHO DIED WITHIN FIVE YEARS

Of the entire group, 40 patients survived for five years or longer, and 110 died within five years after their first break in cardiac compensation. The signifi-

TABLE 1.—Age at First Congestive Failure

Age, Years	Men		Women		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
20-29	1	1	1	2	2	1
30-39	3	3	6	14	9	6
40-49	16	15	9	20	25	17
50-59	32	30	13	30	45	30
60-69	38	36	18	30	51	34
70-79	16	15	2	4	18	12
Total	106	100	44	100	150	100

cant data relative to the two groups are summarized in table 2. Among those who lived five years or more there were a greater proportion of persons in the earlier decades of life (45 years or less), a greater proportion of women and a greater proportion of patients who had rheumatic heart disease than among those who lived less than five years.

The group that had rheumatic heart disease is not large enough to establish differences in prognostic trends as determined by the different valvular lesions, but other studies¹ have illustrated the difference in the life history of patients who have mitral endocarditis on the one hand and those who have aortic valvular disease of rheumatic origin on the other. In short, it may be stated that aortic lesions are tolerated better than is mitral stenosis, so that there is a tendency for

TABLE 2.—A Comparison of Patients Who Survived Five Years or More with Those Who Died Within Five Years of the Onset of Congestive Heart Failure

	Less than Five Years (110 Patients)		Five Years or More (40 Patients)	
	Cases	Per Cent	Cases	Per Cent
45 years old or less	15	14	11	28
Proportion of women	14	13	12	30
Proportion of rheumatic heart disease	30	27	14	35
Proportion of coronary disease or hypertension or both	92	84	25	62
Significant electrocardiographic findings (all types)	96	87	31	78
Auricular fibrillation	56	51	17	42
Significant T wave changes	79	72	20	50
Conduction defects (all types)	29	26	5	12
Essentially normal electrocardiograms	14	13	9	23
Cardiac enlargement				
Grade 3 or 4	57	52	21	52
Grade 2	39	36	12	30
Grade 1	8	7	3	8
Grade 0	6	5	4	10

congestive heart failure to supervene earlier in patients who have mitral disease than in those who have rheumatic aortic lesions. At the same time compensation, once restored, is maintained poorly by patients who have rheumatic aortic lesions,² in contrast with those afflicted

with mitral stenosis, who may respond quite satisfactorily to treatment through repeated episodes of recurrent congestive heart failure. The poor outlook of patients who have syphilitic aortitis associated with congestive heart failure has been recognized universally.

The incidence of cardiac hypertrophy was not found to be significantly at variance in the two groups of cases. It must be recalled here that this study deals with patients whose cardiac reserve had been exhausted to the point of outspoken congestive heart failure. In a comprehensive study carried out by Grant,³ comprising 1,000 men in whom organic heart disease had been discovered ten years prior to his survey, among recruits of the last World War, it was shown clearly that the larger the heart the more likely was congestive heart failure to ensue. These patients were the ones who were noted also to have a corresponding degree of limitation of tolerance to exercise—the most reliable criterion whereon to base a cardiac prognosis.

It would seem that, after congestive heart failure has entered the picture, new factors assume importance in determining the future progress of the patient.

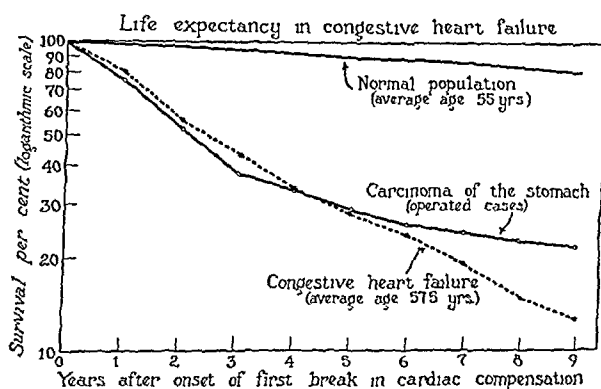


Fig 1.—Survival curves for patients who have had congestive heart failure, for the normal population and for patients on whom gastric resection has been performed for carcinoma of the stomach. The last named survival curve is based on studies carried out by Walters and his associates.

A comparison of the electrocardiographic findings in the two groups is of interest and at first sight the differences would seem significant from the standpoint of prognosis. Thus there is a higher incidence of electrocardiographic abnormalities among the group of patients who succumbed during the first five years after the initial break of cardiac compensation. There is also a higher incidence of conduction defects (auriculoventricular as well as ventricular conduction disturbances) and of significant T wave alterations (comprising changes in the T waves either in lead 1 only or in leads 1 and 2, in the T waves of leads 2 and 3 or in the T waves in all three conventional leads). In this connection it should be recalled that the almost universal use of digitalis in treatment of patients who have congestive heart failure undoubtedly must be responsible to some degree for the frequency of T wave alterations; but this would hold true, of course, as much for one group as it would for the other.

As there is a preponderance of older persons among those who succumbed within the first five years after the onset of cardiac decompensation, and as there was among this group a higher incidence of coronary and hypertensive heart disease (the commonest cause of

1. Wilkins, F. A.: A Study of the Course of Rheumatic Heart Disease, *Am Heart J.* 3:139-145 (Dec.) 1927.
2. Dry, T. J., and Wilkins, F. A.: Calcareaous Disease of the Aortic Valve. A Study of 228 Cases, *Am Heart J.* 17:138-157 (Feb) 1939

3. Grant, R. T.: After-Histories for Ten Years of One Thousand Men Suffering from Heart Disease Study in *Prognosis, Heart* 6:275-483 (June) 1933.

T wave inversion and of conduction disturbances of all kinds), these differences in electrocardiographic findings lose their significance to some extent in assessing the prognosis of patients who have reached the stage of congestive heart failure. Auricular fibrillation, it will be noted, occurred much more frequently in the group

patients suffering from rheumatic heart disease, the majority of whom had mitral stenosis.

Among those whose clinical course was more favorable after cardiac compensation had been restored, it will be illustrated presently that all types of gross electrocardiographic abnormalities and all degrees of cardiac

TABLE 3—*The Status of Patients Who Were Still Alive at the Completion of the Survey*

Years After First Failure	Case Number	Age,* Years, and Sex	Cause	Heart Size	Electrocardiogram	Cardiac Reserve	Treatment	Comments
4	1	49 ♀	Mitral stenosis	17 cm.	Right ventricular preponderance	Compensated ..	Moderate restriction and digitalis	Had severe anemia (controlled)
	2	62 ♀	Hypertension	17 cm	Auricular fibrillation, inverted T 1, 2, 3	Compensated most of time	Restricted program, periodic salyrgan, digitalis	
5	3	55 ♂	Mitral stenosis	Enlarged, 1†	Auricular fibrillation	Compensated....	Moderate restriction, digitalis	
	4	70 ♂	Coronary sclerosis	Normal	Diphaseic T 2, 3	Compensated...	Moderate restriction	
6	5	60 ♂	Obesity, coronary disease	17.5 cm	Left ventricular preponderance, inverted T 1	Compensated.	Moderate restriction, program well supervised	Weighted 300 lb. at time of failure
	6	65 ♀	Hypertension	18.5 cm	Auricular fibrillation, left ventricular preponderance	Compensated....	Moderate restriction, digitalis	
7	7	41 ♀	Mitral stenosis	Enlarged, 3	Auricular fibrillation, right ventricular preponderance	Decompensated at intervals	Salyrgan regularly, digitalis and oral diuretics	
	8	61 ♀	Hypertension, mitral stenosis	Enlarged, 3	Right ventricular preponderance	Compensated	Under supervision of family physician	Was obese
	9	72 ♀	Hypertension, hyperthyroidism	Enlarged, 2.3	Auricular fibrillation	Decompensated at intervals	Salyrgan at regular intervals, restricted activities	Thyroidectomy done at the age of 65 years
8	10	62 ♂	Aortic regurgitation	Enlarged, 3	Inverted T 1, 2	Decompensated at intervals	Restricted activity, digitalis	Serologic reaction for syphilis positive
	11	45 ♂	Adhesive pericarditis	Enlarged, 2	Diphaseic T 1, 2, 3	Compensated ..	Restricted activity	
	12	77 ♀	Hypertension, hyperthyroidism	Enlarged, 2	Auricular fibrillation, left ventricular preponderance	Recurrent failure	Much restriction	Thyroidectomy at the age of 69 years
9	13	74 ♀	Coronary disease, hyperthyroidism	Enlarged, 3	Left ventricular preponderance, bundle branch block	Compensated since thyroidectomy	Only moderate restriction	Thyroidectomy at the age of 65 years
10	14	62 ♂	Hypertension	Enlarged, 3	Left ventricular preponderance	Compensated ...	Restricted activity	Weighted 215 lb., weight reduced to 180 lb.
	15	60 ♂	Hypertension	Normal	Negative	Decompensated at times	Restrictions, digitalis	Was in bed for a long time (fractured leg)
	16	63 ♂	Hypertension	19.5 cm	Auricular fibrillation, inverted T 1	Compensated	Restrictions, digitalis	Weighted 215 lb.
11	17	50 ♀	Mitral stenosis, hyperthyroidism	Enlarged, 3	Auricular fibrillation, right ventricular preponderance	Compensated. ..	Considerable restrictions, digitalis	Thyroidectomy at the age of 37 years
	18	47 ♂	Mitral stenosis	Enlarged, 3	Auricular fibrillation	Frequently decompensated	Much restriction and frequent salyrgan injections	Apparently co-operates poorly
	19	38 ♀	Mitral stenosis, hypertension	Enlarged, 3	Auricular fibrillation, inverted T 2, 3	Compensated ..	Visits heart clinic regularly, digitalis	Thyroidectomy at the age of 27 years
12	20	52 ♂	Pick's disease	?	Right ventricular preponderance, inverted T 2, 3	Is in chronic failure	Being treated for failure continuously	
	21	51 ♀	Mitral stenosis, hypertension	Enlarged, 3	Auricular fibrillation, right ventricular preponderance	Recurrent failure	Restrictions, salyrgan, digitalis	
13	22	60 ♂	Coronary sclerosis	Not enlarged	Left ventricular preponderance, diphaseic T 1, 2	Compensated	Much restrictions, digitalis	

* At the completion of the survey.

† On the basis of 1 to 4 in which 1 designates the mildest and 4 the most severe condition.

that survived for five years or more after the onset of cardiac decompensation, a fact again which must not be construed as indicative of a more favorable clinical course for patients whose auricles fibrillate than for those who maintain a sinus rhythm. The explanation is more likely to be found in the fact that there was a preponderance in this group of relatively younger

hypertrophy were found to exist at the time when the patients were first treated for congestive heart failure.

The immediate response to treatment and the degree of cardiac decompensation may be misleading criteria at times in reflecting the future progress of the patient who has congestive heart failure. Though many patients are easily rendered fluid free, recurrence of cardiac

failure may be equally prompt, and, conversely, an initially slow response to treatment may be followed eventually by surprisingly good restoration of compensation.

THE STATUS OF PATIENTS STILL ALIVE AT THE COMPLETION OF THE SURVEY

The data regarding the 22 patients who were alive at the completion of the survey have been summarized in table 3. Attention is drawn to the following findings:

1. There is a high incidence of rheumatic mitral stenosis. It is to be noted that there was but one case of aortic regurgitation in the group. At the time of the original examination of this patient a diagnosis of syphilitic aortitis was made on the basis of a positive serologic reaction for syphilis. The probability that this was a rheumatic aortic lesion occurring in a patient who coincidentally had syphilis must be entertained strongly. In the entire group of 150 patients studied, the diagnosis of rheumatic aortic disease was made in 7 instances (not including the aforementioned case). Only one of these patients lived beyond two years after the onset of congestive heart failure. This particular patient, who was noted to have a complete auriculo-ventricular dissociation and a moderately enlarged heart, lived six years after the first break in cardiac compensation. A study of 228 cases of calcareous aortic stenosis indicated clearly the late onset of symptoms in aortic disease but the poor response to treatment after the heart actually has failed.

2. The sexes are equally represented among this group of patients who were still living at the time the survey was completed. It is to be recalled that the proportion of men to women in the entire group was 5:2.

3. In almost every case there is cardiac enlargement, varying from moderate to gross hypertrophy. This fact indicates again that one's sense of values referable to cardiac size as a prognostic criterion is modified somewhat after heart failure occurs.

4. In 50 per cent of the cases the hearts were fibrillating at the time when the patients were being treated for heart failure, and gross electrocardiographic abnormalities existed in almost every case.

5. Only a few patients were living a life which might approximate normal; the very prolongation of life seems to depend on systematic supervision of the patient and on an indefinite extension of a therapeutic program intended to meet recurrences of cardiac failure when they occur.

6. The unburdening of extracardiac loads such as anemia, hyperthyroidism and obesity (and, one might add, though not represented in this group, avitaminosis and myxedema) may aid considerably in restoring cardiac reserve to an already crippled heart.

COMMENT

The occurrence of congestive heart failure regardless of the cause represents, with few exceptions, a serious phase of heart disease. The exceptions refer to those instances in which it is possible to relieve the load which the cardiac apparatus is carrying, as in the correction of severe anemia, or avitaminosis, the control of hyperthyroidism or of myxedema and the reduc-

tion of the peripheral capillary bed—specifically by reduction of the weight of obese patients.

The withdrawal of a patient from an occupation involving much physical activity to a more sedentary mode of life is an approximation to the procedures enumerated but is less effective, since in the majority of cases of congestive heart failure the process underlying the cardiac decompensation results from an irreversible and a progressive disease. A heavy mortality rate from year to year is the rule in patients whose hearts have once been decompensated. Mitral disease has a tendency to cause heart failure relatively early in life, but the reestablishment of compensation usually can be accomplished at times after repeated failures in fact. Aortic disease of rheumatic origin has a tendency to cause heart failure relatively later in life, but the maintenance of compensation once restored is seldom lasting. Similarly, congestive heart failure due to syphilitic aortic disease has a poor prognosis.

Hypertensive and coronary disease may follow either tendency after the first break in cardiac compensation. Malignant hypertension has a poor prognosis even independent of cardiac failure. Similarly, acute myocardial infarction tends to increase the gravity of coronary sclerosis. It is known further that the coexistence of pulmonary disease militates against recovery from congestive heart failure.

The presence of cardiac enlargement seems clearly to favor the onset of cardiac decompensation; yet some patients who have considerable cardiac hypertrophy seem to do as well (or as poorly) as do many with lesser degrees of enlargement. The same remarks as apply to cardiac enlargement could apply readily to patients whose auricles fibrillate. The observation has been made³ that patients in congestive heart failure respond more satisfactorily to treatment if auricular fibrillation is also present, regardless of the cause, than if it is not present, and this study seems to bear this observation out. Electrocardiographic findings are of little help in the prognosis of congestive heart failure. They conform to the disease responsible for the cardiac decompensation rather than to its gravity. The initial response to treatment does not reflect necessarily any reliable prognostic trend.

If we can learn a lesson from those patients who have continued to live after their hearts have once decompensated, it is simply that recurrences of failure must be not only anticipated as a possibility but actually expected, for the prolongation of life seems to depend on a systematic therapeutic program which calls for close cooperation between the patient and his physician.

The risk of administering an injection of a mercurial diuretic agent when it is perhaps not necessary is far less than the risk of allowing congestive failure to proceed from its earliest stages (when clinical evidences are still lacking). Many patients learn to recognize sub-jectively the earlier symptoms of return of heart failure; others are warned of oncoming decompensation by a daily increase in their weight. The choice of drugs in the treatment of congestive heart failure and in the maintenance of compensation is a matter of individualization, but digitalis seldom can be left out of the therapeutic program of any patient who has or has had congestive heart failure, regardless of its cause.

WAR INJURIES TO THE HEAD

TREATMENT OF PENETRATING WOUNDS

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As a result of the bombing of Hawaii on Dec. 7, 1941 the opportunity was given to study and operate on a large number of patients with neurosurgical injuries.¹ This communication is a report of experience in the treatment of penetrating wounds of the head as seen among the first American casualties of the present war.

Nearly all these wounds were compound depressed fractures of the skull produced by fragments of shrapnel which varied in size from thin flat pieces less than 1 cm. across (fig. 3) to large, heavy, irregular chunks of steel 3.5 to 4 cm. wide and 0.5 to 1 cm. in thickness (fig. 1). The larger pieces of metal all had extremely sharp, jagged points, which ripped great irregular holes in the tissues of the head through which they passed. There were no round smooth bullets found in the group of patients treated.

The nature of the wound thus produced depended on the size of the missile and its position when making contact with the head. Some scalp wounds were so small as to be almost missed on casual examination. One such patient had a small wound in his forehead which appeared to be nothing more than a scratch. It was not picked up as a penetrating wound until twenty-four hours later, when roentgenograms of the skull revealed a metallic foreign body about 1 cm. in diameter and 1 to 2 mm. in thickness deep in the opposite frontal lobe (fig. 3). This missile had obviously struck the head on edge. The large wounds in the scalp were jagged, irregular defects with multiple radiating lacerations and considerable destruction of tissue.

Injuries to the skull by these missiles were interesting. The metallic fragments were apparently all traveling at high speed, as the defects produced in the skull were uniformly circumscribed holes (figs. 2, 3 and 4). No long linear fracture lines radiating from the point of entry of the foreign body were seen in any of the fractures. The smaller metal fragments usually made correspondingly small holes in the outer table of the skull, whereas the hole found in the inner table was many times larger than the missile. The shattered bone fragments were carried deep into the brain, lacerating cortical vessels and brain substance over a much wider area than what one would suspect from the size of the penetrating missile. The more extensive injuries to the head in which large portions of the skull were carried away or large pieces of bone driven deep into the brain were obviously fatal injuries. These patients were moribund on admission, and no attempt was made to treat them surgically.

The injury to the brain and its coverings was found as a rule to be much more extensive than one would anticipate from either the size of the foreign body or the condition of the patient. Large gaping defects were always found in the dura mater, having been made not only by the penetrating object but also by the fractured pieces of bone carried in with it. Cortical and subcortical vessels were torn, resulting in subarachnoid hemorrhages, some of which reached the proportions of small hematomas at the site of the injury. Hematomas of various sizes were often found deep in the

white matter of the hemispheres along the tract of the foreign body. In the larger compound wounds, by the time the patient reached the operating room, liquefied cerebral tissue and cerebrospinal fluid were always found herniating through the defect in the skin.

TREATMENT

Treatment of wounds to the head, like traumatic wounds elsewhere, is directed toward (1) restoring to normal as near as possible the injured tissues and (2) preventing complications which may arise secondary to the injury and result in disability, deformity or death.

The preliminary treatment, prior to operation, is extremely important. When the wounded person is first seen at the receiving station the hair about the wound in the head is clipped widely with the hair clippers. The edges of the lacerated wounds are cleansed with soap and water. Any large bleeding vessels in the lacerated scalp are stopped with a hemostat, local pressure or a piece of rubber tubing about the head. A temporary dressing is then applied after the wound has

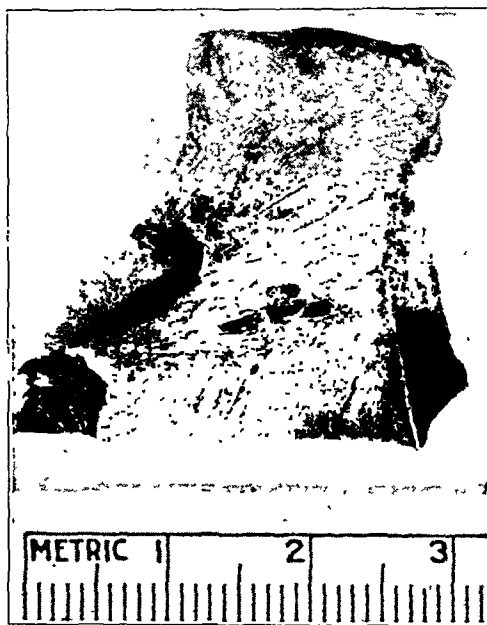


Fig. 1—Example of the type of sharp, irregular pieces of shrapnel found in war wounds; $\times 2$.

been filled with powder of one of the sulfonamide drugs. Unless the patient has extensive painful wounds elsewhere, the routine use of morphine is contraindicated.

On admission to the hospital the patients are first examined neurologically and given tetanus antitoxin, and roentgenograms of the skull are taken, stereoscopic views whenever possible. If the patient shows signs of shock, this is first treated with intravenous saline solution, blood plasma or whole blood when the latter can be obtained. After shock has been treated the operation is not delayed any longer than necessary. Because of the large number of cases treated, it was necessary in many instances to delay as long as twenty-four to thirty-six hours after the injury. No infection was encountered in any of these cases in which the preliminary treatment described of cleansing the wound and applying the sulfonamide powder was employed.

As a local anesthetic 2 per cent procaine hydrochloride was found adequate for the majority of our patients, since they were conscious and cooperative. Restless and uncooperative patients can be given avertin with any-

1. It is not permissible to report the number of persons treated at this time

lene hydrate supplemented with intravenous pentothal sodium.

In the treatment of the scalp wounds a wide area circumscribing the wound is painted with iodine and a local circular block anesthesia induced. The wound can then be scrubbed and cleansed without pain to the



Fig. 2.—Postoperative appearance of skull from which the shrapnel shown in figure 1 was removed. A silver clip lying beneath the middle fossa of the skull indicates the depth of penetration (arrow).

patient. Large quantities of sterile water and green soap and a mild antiseptic are used. All jagged irregular edges about the wound are cut away. It was found that large defects in the scalp, up to 4 cm., could be approximated and closed tightly by adequate undermining. A fusiform incision is made around the wound. After the scalp has been slid so that the edges are approximated, the tension on the closure sutures can be relieved by placing one or two anchor sutures 1 cm. or so back from the incision edge. Such a suture passes through the scalp in its new position and beneath the periosteum. It is tied on the outside over a small roll of gauze. All scalp wounds are closed without drains by two layers of black silk. Larger scalp wounds are closed by the method of Sargent²; i. e., undercutting the outer layer of the scalp and making a new incision on either side of the wound so that it can be approximated. Two raw crescent shaped areas are thus exposed, but these rapidly granulate in and epithelize.

When the penetrating hole in the skull is small, one can obtain adequate exposure for the treatment of the underlying structures by rongeur away the jagged edges of bone and enlarging the defect. Larger holes in the skull, however, with more extensive damage to the dura mater and brain, require more exposure and for these a small bone flap is elevated along one side of the hole in the skull. The exposure of the bone flap in the larger wounds is important also in order to obtain a large piece of periosteum from the skull to be used in the repair of the dura mater.

The defects in the dura mater, like those in the scalp, are usually jagged, irregular holes. They are always larger than the scalp wound, owing to tearing by the fractured fragments of skull in addition to the missile. The edges of the dural defects are debrided of the small irregular tags to obtain straight, clean edges. The cautery for small bleeders on these edges is avoided, hemostasis being obtained by mosquito clamps. All dural defects are closed tightly with

the patch obtained from the periosteum of the overlying skull. The importance of a tight closure of the dura mater with such a patch cannot be overemphasized, particularly when the wound passes through any of the paranasal sinuses. One can thus prevent the formation of a fistula with cerebrospinal fluid draining through the nose and the possible development of meningitis from the adjacent potentially infected sinuses.

One of our patients was struck between the eyes with a large jagged piece of steel (fig. 1). The missile passed directly through the frontal sinus, and buried itself in the skull to a depth of 9 cm. (fig. 2). In its pathway the roof of the left and medial wall of the right orbit and the cribriform plate were carried away. The ethmoid and sphenoid sinuses were destroyed. The contents of the left orbit, including the optic nerve, were torn. A hole measuring 4 by 6.5 cm. was opened up in the dura mater covering the inferior surface of both frontal lobes. A large periosteal patch was removed from the bone flap and this extensive defect closed tightly by means of interrupted black silk sutures. The wound was filled with sulfanilamide powder and closed without drains. No cerebrospinal fluid fistula nor infection developed, and the patient is recovering.

A thorough débridement and cleansing of the tract of the missile through the brain is perhaps the most important part of the operative procedure. Hair, dirt, grass and fragments of fractured bone were found to have been carried into the brain by the penetrating missile. The blood clots along the tract and the damaged brain are removed with the suction. The fragments of bone and the foreign bodies are picked out of the wound and the sinus tracts then irrigated with copious quantities of warm sterile saline solution.

Some surgeons recommend palpation of the tract with the finger. This can be done when the wound is larger than the finger. The smaller tracts are best explored by the method advocated by Dr. Harvey



Fig. 3.—Foreign body in right cerebral hemisphere. Arrow indicates point of entry on left. The patient died forty eight hours later of an extensive subdural hemorrhage from a vessel torn in the falx.

Cushing; i. e., palpating the depths of the wound with a soft rubber catheter.

When an inspection of the tract in the brain shows that it is completely free from foreign material and all bleeding points have been arrested, the tract is filled with sulfanilamide powder before the wound is closed. Although none of our patients have been followed for a sufficient time to make a statement as to the post-

2. Mitchiner, P. H., and Cowell, E. M.: Air Raid. XI. Wounds of Head, Spine and Peripheral Nerves, *Lancet* 1: 639-645, 1939.

operative complications, it seems from reports of others³ that, if the aforementioned treatment is carried out, the possibility of subsequent formation of a brain abscess or meningitis will be avoided.

The question arises as to whether or not the metallic foreign bodies should be removed from the brain or left in. In all these cases in which the missile was at all accessible it was removed. However, in instances in which the metal was small and had penetrated the brain to a great depth and it was obvious that greater damage to the brain would be produced by attempting to recover it, the foreign body was not removed. In 1 such case (fig. 3) the shrapnel entered the head in the frontal region high on the left side and passed directly through the left frontal lobe and lodged about 2 cm. from the midline on the right side. Obviously no attempt was made to remove this foreign body, although the tract in the brain through which it passed and the dura and skull were treated as described. The chief danger in leaving metallic foreign bodies in the brain is the development of convulsions at a later date. It has been said that 5 to 50 per cent of persons with bullets in their brain will eventually develop epilepsy. These attacks may not begin for six months or more after the injury. The use of electromagnets for the recovery of these bodies has been reported.⁴ This method may be of value in selected cases.

The postoperative care of these patients consists chiefly of absolute bed rest. Pain is controlled with acetylsalicylic acid and barbiturates. All patients are given chemotherapy for a week or ten days or longer after operation depending on the temperature reaction and extent of injury. The routine use of an anticonvulsive drug in adequate doses is recommended. Soluble phenobarbital 0.065 Gm. three times a day was used. The patients are strongly advised to continue the drug for a period of at least one year after the injury.

Intravenous hypertonic solutions were found unnecessary in these cases. Lumbar punctures were done only when persistent signs of subarachnoid hemorrhage appeared.

No postoperative complications were encountered in the patients operated on within the first forty-eight hours, with one exception. This patient died suddenly the day after operation of an extensive subdural hemorrhage (fig. 3). Another patient, seen in a small rural hospital four and a half days after his injury, died of meningitis (fig. 4). When postoperative infections occur it may become necessary to reopen and pack the wound for drainage. The gauze used for packing is filled with sulfanilamide powder.

PHYSIOLOGIC OBSERVATIONS

Some interesting observations were made on the physiology of this type of wounds in the head. Few of the patients with penetrating wounds of the brain were brought to the receiving station in an unconscious state. The majority of them had not even been unconscious but were able to recall everything that had transpired from the time they were hit until they

arrived at the hospital. This was a most surprising fact to the doctors who saw these cases. Patients with large gaping wounds in the frontal areas with considerable quantities of cerebral tissue oozing from the wounds were found to be conscious, cooperative, rational and able to give their identification. Most of

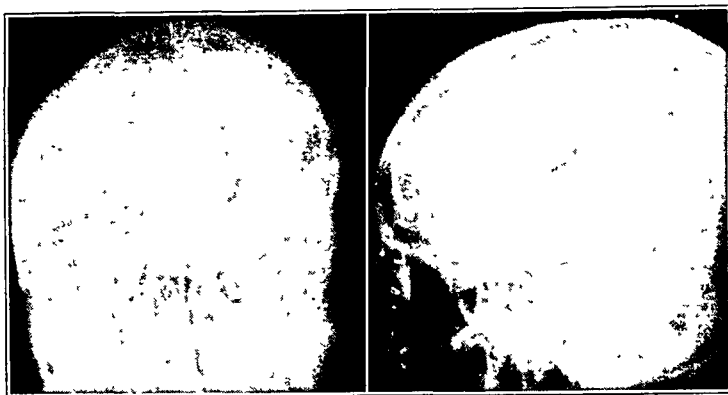


Fig. 4.—Irregular piece of shrapnel lying partly in lateral ventricle. Note air in temporal horn of ventricle and about hole in skull. This wound was infected.

the patients were in a state of mild shock with lowered blood pressure and pulse rates from 90 to 110. Aside from this the normal physiologic functions did not appear to be altered materially. These findings applied only to the penetrating wounds of the head. Patients whose lesions had been produced by a large object striking the head, or vice versa, carrying away large sections of brain and skull or producing extensive depressions, were obviously deeply unconscious. They showed slow, irregular heaving respiration, weak, rapid, thready pulse and elevated blood pressure. All patients admitted in this condition died within a few minutes to twelve hours after admission to the hospital.

The observations on the state of consciousness of patients with penetrating wounds of the brain is in accord with the present accepted theory of the physiology of the loss of consciousness from head injuries. The experimental work of Walker,⁵ Denny-Brown and Russel⁶ and others has shown that loss of consciousness associated with injury to the head is primarily the result of microscopic changes in nerve cells of the brain resulting from physical acceleration of these cells. Walker cites the case of a man lying under his automobile with his head resting on the ground. When the car jack slipped, his head was crushed between the car and the ground and an extensive fracture of the skull produced. The patient did not lose consciousness even for a second. The opposite condition is that of a person who walks into a door, striking his head. He falls to the floor, is dazed for several minutes, develops a violent headache, vomits and is extremely ill. He shows all the usual signs of a cerebral concussion. In the first case the brain was not affected by inertia, having been held in a fixed position when struck. The patient did not lose consciousness. In the second case the brain was set into motion by the blow, and the damaging effect on the brain produced by the physical acceleration of the nerve cells was evident by the illness which followed.

Other physiologic conditions which have been said to contribute or cause the loss of consciousness in head

3. Guleke, N.: Should the Fresh Bullet Wounds of the Brain Be Sutured? *Deutsche Militärarzt* 6:1, 1941. Vogeler, K.: Cranial Gunshot Wounds: Therapy, Prognosis and Sequelae, *Med. Welt* 14:1084, 1940; 14:113, 1940.

4. Heller, E.: Establishment of Centers for Head Wounds in War Time and Use of Giant Magnets for Removal of Bullets Remaining in the Brain, *Chirurg* 11:708-709, 1939.

5. Walker, A. Earl: Penetrating Wounds of the Head, read before the Academy of Neurological Surgery at Los Angeles, Nov. 11, 1941.

6. Denny-Brown, D., and Russel, W. R.: Experimental Cerebral Concussion, *J. Physiol.* 99:153, 1940.

injuries are loss of blood, damage to brain substance itself and cerebral anemia. All three of these conditions were seen in the majority of these patients. There was considerable loss of blood in almost all cases due to wounds in other parts of the body, some of which were very extensive, such as the loss of one or more extremities. With this loss of blood a cerebral anemia was certainly present as part of the condition of shock which these patients showed. The damage to brain tissue was as a rule rather extensive, yet in these patients consciousness was not impaired.

It is my impression that the reason these patients did not lose consciousness from their injury was the fact that the force applied to the head was concentrated in such a small area compared to the entire area of the skull that generalized acceleration of the brain was not produced. The speed with which the objects were traveling was so great that the head was struck, perforated and penetrated before the brain as a whole had time to be set into motion. The absence of linear fractures of the skull around the point of entrance is evidence of the high speed the missiles were traveling. The threshold of acceleration necessary to produce unconsciousness, as shown by Denny-Brown and Russel,⁶ is the change of speed of the head from 0 to 23 feet per second. It would seem impossible for a small missile striking the head at high speed to set the entire head in motion at this rate.

LITERATURE

While the literature on the treatment of closed craniocerebral injuries has been voluminous, there has been surprisingly little reference to penetrating wounds of the brain in the period between the appearance of the medical records of the first world war and 1938. In the past three years (1938 to 1941) surgeons and neurosurgeons in almost every country of Europe and Asia have reported their experiences with this type of wound. Many reports have come out of Germany,⁷ France,⁸ England,⁹ Australia,¹⁰ Norway,¹¹ Italy¹² and even China.¹³ The low mortality rate reported by these authors shows the value of the modern methods of treatment of these wounds. The mortality of brain wounds in the early part of the first world war was over 60 per cent.¹⁴ Dr. Harvey Cushing lowered this figure to 28 per cent by improving the operative technique. The mortality rate of the second world war should be far below this figure, judging from these recent reports.

7. Peiper, H.: Craniocerebral Gunshot Injuries in War, *Deutsche med. Wchnschr.* 65:1598-1601, 1939. Jentzer, A.: Cranial Trauma and Craniocerebral Projectile Wounds, *Schweiz. med. Wchnschr.* 70: 648, 667, 1940. Wolf, W.: Surgical Therapy of Craniocerebral Injuries in World War, *München. med. Wchnschr.* 87:796-799. Guleke,³ Schulze and Belzendahl.¹⁵ Vogeler.²

8. Garcin, R., and Guillaume, J.: Therapy of Craniocerebral Wounds from War Projectiles: Results Obtained by Application of Modern Neurosurgical Methods in Medical Units at Fror. *Chir. (Paris)* 66:124-136, 1940; *Therapy in Neurosurgical U* 557-566, 1940. de Martel, T.: Craniocerebral Injuries in *Neurosurgery*, *ibid.* 66:612-613, 1940. Vincent, C., and Lafon, J. L.: Craniocerebral Wounds Due to Projectiles: Neurosurgical Therapy, *J. de méd. et chir. prat.* 111:87-91, 1940. Vincent, C.: Therapy of Craniocerebral Wounds from Projectiles, *Mém. Acad. de chir.* 65:1034-1044, 1939. Lauwers, E.: Therapy of Craniocerebral Wounds Caused by Projectiles, *Presse méd.* 40:30-32, 1940. Ducing, J.; d'Harcourt, J.; Gringo, S., and Folch, P.: General Principles of Treatment of Recent Craniocerebral Wounds Caused by War Projectiles, *Rev. de chir.* 77: 625-644, 1940. Garcin and Guillaume.¹⁰ Aubin and Reynaud.¹⁶ Heller.⁴

9. Jefferson, G.: War Wounds, *Brit. M. J.* 2:347, 1939. Cairns, H.: Gunshot Wounds in 1940, *J. Roy. Army M. Corps* 76:12-22, 1941. Lockwood, A. L.: Surgical Problems of War, *Brit. M. J.* 1:445-447, 1940. Mitchiner and Cowell.⁵

10. Money, R. A.: War Wounds, *M. J. Australia* 1:443-447, 1940.

11. Olivecrona, H.: Gunshot Wounds, *Nord. Med.* 2:1543-1547, 1939.

12. Decker, P., and Rossier, J.: Craniocerebral Wounds in War, *Surgery, Rev. méd. de la Suisse Rom.* 60:321-356, 1940.

13. Von Morini, A.: Treatment of Gunshot Wounds of Skull and Brain Under War Time Conditions, *Chinese M. J.* 53:477-488, 1938.

14. Coleman, Claud D.: War Wounds of the Nervous System, *Ann. Surg.* 113:712-719, 1941.

A few important points which most authors agree on in the treatment of penetrating wounds of the head may be mentioned: 1. The optimum time to operate is within six hours after the injury, but wounds which have gone untreated as long as forty-eight hours should be treated as fresh wounds and closed without drains, unless there is obvious infection. After forty-eight hours the wound is treated as a brain abscess with open drainage.¹⁵ 2. All metallic foreign bodies should be removed if possible, because they lead to secondary abscess and epilepsy. 3. The defect in the dura mater should be closed completely in clean wounds with fascia or periosteal grafts. 4. Generous use of sulfanilamide not only in the scalp and skull wound but in the missile tract in the brain is recommended.¹⁶ Sulfanilamide is preferred because it has been found to be much more rapidly absorbed into the blood stream from an open wound than any of the other sulfonamide drugs.¹⁷

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THE SOLDIER'S IRRITABLE HEART

CERTAIN OBSERVATIONS OF INTEREST

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Much has been written concerning the irritable heart of soldiers, the best by DaCosta in 1871 and a good deal of varied interest in the last two decades since the first world war. The chief type has been well described under various names, best known of which are neurocirculatory asthenia and effort syndrome. The fundamental cause, however, remains obscure, the types and variations are not well differentiated, and early recognition at the time of recruitment of persons prone to a disabling degree of the condition under the stress of heavy military service is sometimes far from easy. These problems still await solution.

Meanwhile there are points of immediate interest and importance about the condition that are inadequately recognized but should be helpful in the present military emergency. These I wish herewith briefly to present.

In the first place, true irritability of the heart as indicated by extrasystoles or paroxysmal tachycardia is not connected in any way with neurocirculatory asthenia except accidentally. In fact, most persons with the latter condition tend to have little arrhythmia of the heart. The nervous tachycardia so often present in neurocirculatory asthenia and in men being examined for entrance into military service tends actually to keep away extrasystoles. Cardiac arrhythmia may, however, easily induce a cardiac neurosis unless care is taken not to exaggerate its importance and unless steps are planned to try to eradicate it. Rarely may the fatigue from excessive arrhythmia help to induce neurocirculatory asthenia.

The next point also concerns definition. Neurocirculatory asthenia is not established as yet primarily

15. Schulze, W., and Belzendahl, W.: The Treatment of Infected Shot Gun Wounds of the Skull and Brain in Military Hospital, *Deutsche Militärärztl.* 5:514, 1940. Guleke.³

16. Garcin, R., and Guillaume, J.: Systemic Association of Preventive Sulfanilamide Therapy and Early Surgical Therapy of Craniocerebral Wounds Caused by War Projectiles: Value of Sulfapyridine, *Mém. Acad. de chir.* 66:755-759, 1940. Aubin, H., and Reynaud, M.: Large Amounts of Sulfanilamide and Sulfapyridine in Craniocerebral Wounds, Especially Those Due to War Trauma, *ibid.* 66:787-790, 1940.

17. Goodwin, L. G., and Findley, J.: Absorption and Excretion of Sulfanilamides Applied Locally; Observations in Rabbits, *Lancet* 240:691, 1941.

as a psychoneurosis, although such is at least a common complication. A cardiac or other neurosis may be present with none of the evidence of neurocirculatory asthenia, which is clinically a symptom complex resulting chiefly from fatigue and consisting of various combinations of palpitation, heartache, dyspnea (often sighing), faintness, easy fatigability, increased perspiration, tremor and nervousness, in whole or in part. Anxiety neuroses and hysteria may induce hyperventilation and secondary palpitation and faintness, and perhaps even the entire symptom complex of "neurocirculatory asthenia," but fatigue per se without any initial neurosis at all can apparently set off typical neurocirculatory asthenia. How much of a role anxiety neuroses and how much fatigue per se and how much their combination, or still other factors, have to do with the development of neurocirculatory asthenia, and whether it is to be adjudged a disorder of the vegetative nervous system to be set off by any one of a variety of causes, are not yet known. More studies of the relationship between these various conditions are needed, and such studies are actually now under way.

In the next place, the borderline between "neurocirculatory asthenia" and "neurasthenia" is apparently so wide, if any exists at all, that accurate statistics of the incidence of the former are at present impossible. It is certain, for example, that many cases of neurocirculatory asthenia are being designated as neurasthenia or anxiety or fatigue neurosis or even psychoneurosis or constitutional psychopathic inferiority in the examination of the draft for the army and in medical diagnoses and discharges of soldiers already in service. For the present, for the sake of clarity, there should be some attempt at more accurate definition or at least designation. If there is a psychoneurosis with symptoms of neurocirculatory asthenia, both conditions should be stated to be present, with emphasis on the one which is preponderant; if only one of the two conditions is present, the correct designation should be given. Neurocirculatory asthenia should not yet be called a psychoneurosis, or vice versa; it is hoped in the future, as stated, to have a clearer understanding of their relationship.

It is of interest that as yet there has been relatively little neurocirculatory asthenia in the American or even in the British army, partly because an attempt has been made to weed out possible candidates for the condition before enlistment and partly because the strain of actual combat duty in the British army has been as yet not heavy, except at Dunkerque and in Greece and Crete and now in North Africa. More will undoubtedly crop up when military operations become more extensive. Even the civilian population under heavy bombardment evidently suffered little from neurocirculatory asthenia.

And, finally, it has been found wise in England to treat the average run of the cases of neurocirculatory asthenia that have arisen in the armed forces as ordinary medical cases of fatigue without referring them to either cardiologist or psychiatrist, in this way avoiding overemphasis of either heart or mental state in the patient's mind. This seems a wise and sensible procedure.

Thus, for the time being at least, it is important to differentiate between the irritable heart with arrhythmia, neurocirculatory asthenia, and psychoneuroses.

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EARLY DIAGNOSIS AND PROPER MANAGEMENT IN CERVICAL CANCER

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The most definite fact known regarding cancer is that with modern methods of treatment a reasonable hope of cure is absolutely dependent on an early diagnosis. It is a source of great satisfaction that many thousands of men and women are living in the United States today who were treated for cancer more than five years ago. On the other side of the ledger is the depressing realization that these thousands represent scarcely one fourth of the total number treated. The explanation for this relatively small salvage lies principally in the fact that the majority of persons seek treatment only after the disease is well advanced. There can be no doubt of this explanation, for there is ample proof of the relative hopelessness of the disease when it is advanced and the good results obtainable when it is early, in the published reports of the world. By way of illustration, the figures from the University of California Hospital on cancer of the uterine cervix are entirely representative (table

TABLE 1.—Five Year Survival Rates: 432 Primary Carcinomas of the Cervix at University of California Hospital (1916-Dec. 31, 1935)

Stage	Cases	Percentage	Number Surviving 5+ Years	Percentage
1 } Early.....	46	28.4	37	80.4
2 }	77		31	40.3
3 } Advanced.....	211	71.6	50	23.2
4 }	98		4	4.1
	432		122	28.2

1). They show that better than one half of the patients with early lesions survived for more than five years while less than one fifth of the women with advanced growths survived the five year period.

These figures also show that two thirds of the women seeking treatment for cervical cancer had advanced growths. It seems clear, then, that late diagnosis is the chief limiting factor in achieving significant improvement in results, and the most important clinical problem regarding cancer today is making earlier diagnoses.

Having considered briefly the importance of early diagnosis, I shall turn my attention to the methods of diagnosis and the proper management of cervical cancer. The first factor involved in making an early diagnosis is prompt attention to the initial symptoms. Unfortunately, up to the present there has been delay in such attention in the majority of cases. The delay has usually been attributable to the patient's ignorance or neglect, but too frequently it has been attributable to the physician also. An analysis of the 432 primary five year cases at the University of California revealed that only 29 patients sought medical attention immediately or within two weeks of the appearance of symptoms, while 278 delayed for more than four months. There were 54 instances of delay attributable to the physician, as

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well as 58 instances of incorrect diagnosis. The total duration of symptoms for all patients when added up was equivalent to three hundred and eleven years, of which the physician was responsible for 11.1 per cent, or thirty-four years. The final result: an average duration of symptoms of eight and seven-tenths months. Yet prompt recognition of warning symptoms would mean a tremendous improvement in the prognosis, without regard to other factors, such as the anatomic extent of the growth or the form of treatment. The accompanying chart illustrates graphically the five year survival results correlated with the duration of symptoms. It is seen that the earlier the symptoms were recognized (provided not more than six months had elapsed) the higher was the percentage of cure. For example, for those whose symptoms were of two months' duration or less the five year survival was 42.4 per cent, which is in striking contrast with the 28.2 per cent salvage for the whole series.

These facts controvert the idea that when symptoms arise the disease is always advanced and emphasize the value of immediate attention to the warning signs. Table 2 shows that when symptoms were of short duration a much higher proportion of the cases were in the early stage than was the case for the whole series.

As to the patient herself, the occasion for delay is usually ignorance of the significance of bleeding, which is the initial symptom in the vast majority of cases (75 per cent in this series). A thin, watery or foul discharge, either coming on initially or representing a change from a mucoid discharge, is the first symptom in a smaller number (15 per cent), while in a few cases (10 per cent) there are no significant symptoms. The bleeding is usually intermittent and of small amount, appearing between the periods often only in response to unusual activity, intercourse or other vaginal manipulation. Patients frequently consider it some abnormality of menstruation and by popular misconception have been led to regard such bleeding as a normal accompaniment of the approaching menopause. When bleeding starts after the menopause it is often spoken of as a return of menstruation. The only remedy for these misconceptions is popular lay education, a subject which cannot be discussed more fully at this time.

Quite within our powers to correct, however, is the physician's part in the picture. Sad indeed is it when we are told by patients that they were not examined

tion is constantly presenting itself to every practitioner who deals with women.

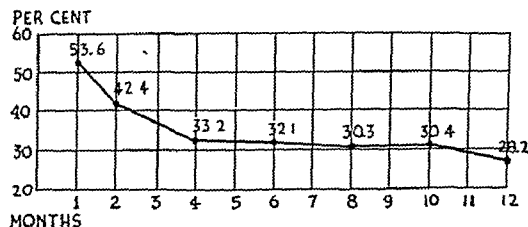
A second possible factor in early diagnosis is periodic examination. Its value has yet to be proved conclusively, but theoretically periodic examination, every six to twelve months during the age of greatest incidence of cervical cancer, say from 35 to 50, would result in the discovery of an occasional early growth. We as physicians should advocate it to our patients much more militantly than we do.

TABLE 2.—Division of Cases into Stages of Advancement

Stage	Whole Series		Those Having Had Symptoms for Two Months or Less	
	Cases	Percentage	Cases	Percentage
1. . .	46	10.6	26	24.5
2. . . .	77	17.8	25	23.6
3.	211	48.8	42	39.6
4. . .	95	22.8	13	12.3
	432		106	

The third important factor is the ability to recognize cervical cancer when we see it, not always an easy task in its early stages. The well developed growth rarely confuses; these lesions are either everted cauliflower masses which are friable and bleed easily on manipulation or they are the ulcerative or indurative type in which one frequently finds a crater lined with grayish white necrotic material. The vaginal fornices are often partially or completely obliterated, and the margins of the growth are hard and lumpy. Occasionally the cervical mucosa remains intact and the form of the cervix is preserved, yet the tissue is hard and fixed. Parametrial induration may or may not be present. Much more difficult to recognize are those lesions which are small and well confined to the cervix, or those which are hidden by a smooth, well preserved external os. The early lesion may appear as a shallow ulcer with a slightly raised firm border, in which case it is difficult to differentiate it from an ordinary erosion; or one may see only an irregular beading of the surface. Touching with an applicator frequently causes bleeding. In case of doubt, the only safe plan is to perform a biopsy, for no man lives who can correctly diagnose every early lesion by inspection with the naked eye alone. In this series there were 18 instances of accidental diagnosis.

Aids in the diagnosis of early carcinomatous changes are Schiller's test and the colposcope. The former is performed by instilling into the vagina a sufficient quantity of modified compound solution of iodine (formula: iodine 1 part, potassium iodide 2 parts, water 300 parts) to cover the cervix completely. After five minutes the solution is sponged out and the cervix reinspected. The normal mucosa stains a dark mahogany; eroded areas fail to stain at all; when carcinoma exists the mucosa appears dead white, and usually there is a distinct, well defined border between the normal and abnormal areas. This test depends on the presence of glycogen in the normal epithelial cells and on its absence in carcinoma cells. When positive, it is very suggestive and is an aid in pointing out areas to be taken for biopsy. When the test gives a negative result the absence of cancer should not be assumed. Occasionally one encounters false positives also. If the limitations of the test are recognized it can be of value, but the results can never be regarded as definitely diagnostic. The colposcope, which is merely an instru-



Percentage of patients surviving more than five years whose duration of symptoms was one month or less, two months or less and so on

when they consulted their physicians on account of bleeding but were informed that "It is only the menopause." There were at least 16 such cases in this series. Of every patient with bleeding, the absolute necessity for vaginal examination and further investigation, if the cause is not immediately clear, cannot be overemphasized. If nothing is found the physician has an excellent opportunity to apprise his patient of the symptoms which demand immediate investigation should they arise at a later date. The word "cancer" need not even be mentioned. This opportunity for individual educa-

ment for bringing the surface of the cervix into greater magnification under intense illumination, falls into much the same category. To be of value, this instrument requires great usage in order that one may learn to recognize the abnormal as distinguished from the normal. Here, too, the results can be regarded as suggestive only.

In the final analysis, the most important procedure of all in confirming or excluding a diagnosis of cancer is biopsy. A biopsy is absolutely demanded in every suspicious case. The biopsy is not without its drawbacks, however, and should not be performed indiscriminately. A cut made into a suspicious cervix, which is usually infected as well, occasionally leads to a pelvic cellulitis and even death. We have had such cases. While the matter is as yet unproved, the cut may also open the lymphatics to the spread of cancer. Because of this possibility, if cancer is likely to be present it is best not to perform a biopsy except under conditions which will permit immediate treatment should the diagnosis be confirmed.

Lastly is the problem of correctly interpreting the microscopic picture. Generally the picture is quite clearly cancer or not cancer, but occasionally one

Clinical diagnosis, on the other hand, is every man's problem, and I am convinced that much can be done to promote earlier and more accurate diagnoses. If results in this disease are to be improved, the lesson is this: 1. Every physician must be keenly aware of the possible significance of bleeding or abnormal discharge, particularly when it arises between periods or after the menopause. When such symptoms appear, a vaginal examination including inspection of the cervix is imperative; biopsy is indicated if the appearance of the cervix is not clearly innocent. When a suspicion of cancer has proved groundless, a warning of significant symptoms should be given. 2. Every physician should encourage periodic pelvic examination during the years of greatest cancer incidence. 3. Every physician should see that a biopsy is taken of all suspicious lesions of the cervix, preferably under circumstances which will permit immediate treatment should cancer prove to be present. 4. Every physician should see that patients with cancer get the benefit of the best facilities and knowledge in treatment.

ABSTRACT OF DISCUSSION

DR. RALPH E. CAMPBELL, Madison, Wis.: Dr. Morton has published several reports relative to carcinoma of the cervix which have added significantly to the literature. This report from the University of California Hospital adds another important contribution to the early diagnosis and proper management in cervical carcinoma. Table 1 shows, relative to patients surviving five years after treatment, that it is most important that the cancer of the cervix be seen in its early stages rather than in the advanced stages to obtain satisfactory therapeutic results. The chart shows that patients with long standing symptoms show favorable five year survival figures proportionate to the length of time they have presented symptoms. From the standpoint of both prognosis and treatment these analyses are important. Table 1 and the chart presented real problematic discussions. It would seem that the question of early diagnosis in part depends on when the patient appears before the physician for examination, and this in many instances depends on lay education. Too frequently women ignore such symptoms as a vaginal discharge and irregular bleeding. This may be due to ignorance or ill advice from other women. Some women fail to appear for examination because of the fear of cancer, not realizing that the disease is curable. It has been common thought with women that irregular bleeding near the menopause is a normal accompaniment of this change. Occasionally women believe that postmenopausal bleeding is the reappearance of the menstrual function and also attribute no significance to increased vaginal secretions. Unfortunately, some physicians play a part in giving these erroneous ideas to their patients; they may further incriminate themselves by omitting a pelvic examination or by performing an incomplete pelvic examination without speculum visualization. At the same time medical treatment, such as ergot or other preparations, may be instituted which is hazardous from the standpoint of the patient. The foregoing emphasizes the importance of both lay education and postgraduate medical education. The Federated Women's Clubs have accomplished a great deal through their recent lay education project on cancer. In a lay program it should be emphasized that all important are examinations of women at least once or twice a year during the period of sexual activity or child bearing age. This will lead to the detection of irritative lesions and their eradication, which is most important in the prophylaxis of cancer as well as the early diagnosis and treatment of this disease. There is no substitute for the biopsy in the diagnosis of cancer of the cervix.

DR. GEORGE GRAY WARD, New York: There is no question that failure to investigate all cases of bleeding in women, however trivial, has much to do with the fact that so many cases of cancer go far too long before they come to adequate treatment. This carelessness may be largely put down to the fact that biopsy is not resorted to as frequently as it should be. I should like to call attention to the frequency of carcinoma

TABLE 3.—Previous Treatment in Stage 5 Cases

	5+ Years Survival	Died in Less Than 5 Years
Pan hysterectomy for cancer..... (there is ample evidence that ordinary pan hysterectomy is rarely indicated in this disease)	1 (+ radium)	19
Supravaginal hysterectomy for cancer..... (nothing could be more ridiculous)	2 (+ radium)	3
Vaginal hysterectomy..... (only the radical type deserves consideration)	1 (Inter died of recurrence)	5
Hysterectomy, type unknown.....	0	3
Cervical resection..... (mistaken diagnosis)	2	5
Radium..... (grossly inadequate dosage)	1	16
Miscellaneous.....	1	1
Totals.....	8	52

encounters a significant degree of epidermization which is confusing and is frequently misdiagnosed cancer. Well defined degrees of epidermization are rather commonly seen in cervical polyps. Thus a pathologist who is familiar with the varying pictures found in the cervix is essential if correct diagnoses are to be arrived at.

In my opinion, cancer should be regarded as a special disease and its management should be entrusted to those who are properly equipped in education, experience and physical facilities or to institutions dedicated to this end. A combination of high voltage roentgen therapy and radium therapy is the treatment of choice in the vast majority of cases, yet it is rarely possible to provide proper radiation or adequate surgery casually. Some of the results of casual treatment culled from our group of stage 5 or recurrent cases are shown in table 3.

It seems clear that cervical cancer, in fact cancer in general, presents a specialized problem. The results are not good at best, and when the treatment is incomplete or poorly conceived the results are terribly poor. Patients deserve the best chance of cure that modern methods can offer, and this chance is available to them only when they can have the advantage of the best knowledge and the best equipment. Rarely is the general practitioner so equipped, and often this is true of the gynecologist also. It becomes a matter of conscience as to whether a physician is or is not properly qualified.

associated with fibroids. As a result of that condition a great many women have been subjected to a supravaginal hysterectomy without, first, adequate investigation as to the nature of the condition that may be present in the cervix. Often an erosion which may be a carcinoma is simply regarded as an erosion, and a supravaginal hysterectomy is done; later carcinoma develops in the stump of the cervix. Stump cancer is a frequent condition. In my clinic at the Woman's Hospital in New York, in some 900 cases of carcinoma of the cervix, we have had 6.8 per cent cases of stump cancer. Some of those cases had occurred within the first year, and undoubtedly the carcinoma was present at the time of the hysterectomy that had been done elsewhere. The average of stump carcinoma is as high as 4 per cent, as has been shown by a number of workers. If a hysterectomy is to be done for a fibroid uterus, if supravaginal hysterectomy is considered, the cervix first should be carefully investigated, and, if necessary, a biopsy taken; if not, the cervix certainly should be watched by periodic examination. The results that have been obtained in the treating of stump cancer are fully as good as those in the average run of cases. We have been able to save about 40 per cent of patients with carcinoma of the stump.

DR. JOHN J. GILBRIDE, Philadelphia: When there is any suspicion of the presence of cancer of the uterus, the use of the curet is definitely contraindicated. A biopsy should be performed. Through the courtesy of others I am able to present these postmortem observations. Of 12 cases at autopsy local sepsis was present in 11, gross hemorrhage 4, rectovaginal fistula 2, vesicovaginal fistula 2, cancer nodules in the rectovaginal septum 2, unilateral pyelitis 2, bilateral pyelitis 2, unilateral ureteral obstruction 2, bilateral ureteral obstruction 2, right unilateral hydronephrosis 1.

DR. EMIL NOVAK, Baltimore: While recent years have seen some improvement in the results of radiotherapy, there are many who feel that we are approaching the limit of what may be expected from this method of treatment. For the present our chief hope of increasing the salvage rate in uterine cancer must lie in bringing to treatment a larger proportion of early cases. And when we speak of early cases we need not necessarily refer to the very early cases concerning which pathologists have had so much discussion, such as those of so-called preinvasive cancer. We would all be grateful enough for a substantially larger proportion of comparatively small, often obvious, and usually favorable cases in which, for example, the cancer is limited to an area of only a centimeter or so on one of the cervical lips. If a large proportion of our cases were of this sort, the statistics of cancer cure would be immeasurably improved. The work of such organizations as the American Society for the Control of Cancer is of the greatest importance, but the individual physician can and should carry on in his own practice an educational campaign of his own. Moreover, in our efforts to educate the public we should not forget that our own skirts are not altogether clean. There are few doctors so ignorant that they do not know that abnormal bleeding or discharge may mean cancer, and the delays chargeable to medical men are more commonly due to lack of thoroughness or to a peculiar apathetic detachment which allows the patient's diagnostic problem to drift along until it is too late. The physician should look on a suggestive case almost as if he were dealing with an acute disease, and he should not be content until the problem is settled decisively, as it can be in every case. If special methods of study, such as biopsy and microscopic examination, are necessary, as they so commonly are, he should not be satisfied with casually suggesting these to the patient, but he should put the full force of his influence into seeing that his recommendations are carried out. There are few women who will not take the proper steps if the importance of the problem is properly and tactfully presented. It is especially the early favorable cases which need this intensive approach, but in this group the rewards are apt to be large. Biopsy and microscopic examination constitute the sine qua non in the diagnosis of doubtful cases. Such adjuncts as colposcopy and the Schiller test I believe to be of only limited value. Such a test cannot possibly in itself make the diagnosis, and no sensible general practitioner would wish to assume the responsibility of deciding such an important question unless more accurate methods are utilized. The great-

est contribution he can make is to be on the alert for cases which on the basis of symptoms or examination are at least suggestive, and to see that the patient receives proper diagnosis and treatment.

DR. CHARLES EDWIN GALLOWAY, Evanston, Ill.: We owe a responsibility to our patients, and I feel free to treat my clientele in the same manner in which our dentists treat theirs. To all women over the age of 40 for whom I have been responsible once or twice either in an obstetric manner or otherwise I send a notice every six months reminding them that they are due for a pelvic examination. This is done with their consent only and after a personal interview at their last visit in the office. In that manner we shall better serve our clientele because they need just that much reminder that they must allow us to visualize the cervix every so often during the period when it is apt to produce a carcinoma. I would stress what Dr. Novak has said about the Schiller test, and that is that it is only an aid, but it is a very good aid and we as gynecologists should use it routinely.

DR. E. H. KLOMAN, Baltimore: The few words I add will not make me popular with the general surgeon who insists on doing gynecologic operations. If the general surgeon is going to do this special line of work, he might fit himself better and be completely efficient in handling cases of cancer of the uterus. Men doing general surgery do amputations of the cervix and supravaginal hysterectomies when other operations might be indicated. They fail to do biopsies and sometimes do not seem to realize that radium is better than surgery in cancer of the cervix. I do not say this in a spirit of severe criticism, but all of us see cancers treated by the general surgeon that might have been handled in a manner greatly to the patient's advantage if the particular man had better knowledge of gynecologic conditions.

THE INFLUENCE OF RADIATION ON LONGEVITY IN CANCER OF THE BREAST

ORVILLE N. MELAND, M.D.

LOS ANGELES

In this paper I am presenting my experiences relative to the effect of radiation used alone or with surgery in cancer of the breast over a twelve year period from and including the years 1924 and 1935. There were 857 cases in all categories; of these, 803 have been traced—a follow-up of 94 per cent. Those patients who were not located are classed as lost but are not deducted; nor have deductions been made for those dying of intercurrent disease, as there is no way of ascertaining whether they might not have died of cancer had they lived.

Since the Los Angeles Tumor Institute was originally a radiologic clinic, a preponderance of the patients in the early years were treated radiologically. Open incisional biopsy was frowned on and aspiration biopsy had not been perfected, so that diagnosis was based on clinical observations. When a fixed tumor is present or where cutaneous attachment and ulceration are associated with enlarged axillary and supraclavicular nodes, the diagnosis is not in doubt, but when only a small movable lump is found in a woman less than 40 there may be an error in from 15 to 25 per cent of diagnoses made, as Pack¹ points out. However, some patients with minimum manifestations were traced for ten or more years to death, and the clinical diagnosis was verified by the presence of visceral and bony metastasis.

From the Los Angeles Tumor Institute.
Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.
1. Pack, G. T.: *Treatment of Cancer and Allied Diseases*, New York, Paul H. Hoeber, Inc., 1940.

The technic and dosage of radiation changed much in the twelve year period. What was considered adequate in the early years, when little was known about tissue dosage, protraction and timing, is now known to be greatly below requirements for complete destruction of the cells. In the preoperative group the factors

TABLE 1.—Group 1: Operable (Sixty-Three Patients)

Type of Treatment*	Total Patients	Lost	Dead	Five Year Survivals	Died of Cancer Later	
					Number	Years
X O	24	1	7	16 (67%)	3	12, 16, 17
X N	11	0	4	7 (67%)	4	6, 6, 8, 10
X	28	1	14	13 (46%)	7	6, 6, 8, 9, 9, 15, 15

* Under type of treatment in the tables X O indicates preoperative roentgen therapy and operation; X N, roentgen therapy and radium needles interstitially, and X, roentgen therapy alone.

were as follows: 200 kilovolts, 4 milliamperes, 0.5 mm. of copper + 1 mm. of aluminum, 50 cm. distance, with a treatment time of thirty minutes daily to one area only. The areas treated were the breast, the axilla and the supraclavicular region. According to our present measurements, the dose to each area was 300 roentgens at a sitting, and since each one was treated three or four times the total dose was 900 to 1,200 roentgens, which resulted in well defined erythema and tanning. The patients going to operation were operated on in six weeks, while those treated radiologically had the treatment repeated two or three times at intervals of three months. The present procedure is to give 1,600 to 2,000 roentgens, measured in air, over each of four areas; two to the breast tangentially, one in the axilla and another over the supraclavicular region; each area is given 100 roentgens daily. The treatment is completed in about three weeks. After a waiting period of from eight to twelve weeks, when the reaction has subsided, a radical mastectomy is undertaken. This allows the full radiation effect to take place and permits primary healing in the majority of patients. The operation is done with the diathermy knife. Patients who are not to be operated on may have more radiation later, if needed, but the dosage administered is based on individual requirements.

In the postoperative series, the technic over the axilla and supraclavicular areas is the same as in the preoperative group, with a dosage of 900 to 1,200 roentgens for each area. Over the operative field low voltage

TABLE 2.—Group 2: Operable (One Hundred and Twenty Patients)

Type of Treatment	Total Patients	Lost	Died Before 5 Years	Living 5 Years or Longer	Died of Cancer After 5 Years	
					Number	Years
X O	(a) 30	1	10	19 (63%)	1	7
	(b) 23	1	13	9 (39%)*	5	6, 7, 8, 9, 10
	53	2	23	28 (54%)†		
X N	27	3	9	15 (55.5%)	5	6, 6, 6, 7, 8
X	40	4	26	10 (25%)	5	6, 6, 6, 10, 10

* Three patients living with cancer.
† 23 (47%) free from cancer.

is given, since there is no need for any deep seated effects. The factors are as follows: 100 kilovolts, 5 milliamperes, 0.25 mm. of copper + 1 mm. of aluminum, 30 cm. distance. The operative field is divided into different areas and one area is treated daily. It receives 350 roentgens, which is repeated in four days, for a total

of 700 roentgens, resulting in well defined erythema and tanning. This is repeated in from four to six weeks.

The technic used in interstitial irradiation is that given by Keynes² and has been described by me³ elsewhere.

CLASSIFICATION OF GROUPS

The patients treated were divided into the following groups:

Group 1. Operable (63 cases). Tumor movable, with or without cutaneous attachment; no nodes.

Group 2. Operable. Two classes (120 cases): (a) Tumor movable, with or without cutaneous attachment; slight ulceration at times; nodes low in axilla. (b) Tumor movable or partly fixed; cutaneous attachment; may be ulcerating; nodes large or small high in axilla; suspicious fullness and thickness in the supraclavicular region. This is a questionable operable class.

Group 3. Inoperable (152 cases). Tumor small or large, with or without cutaneous or fascial fixation and ulceration; nodes in axilla, supraclavicular region and/or distant metastasis.

Group 4. Postoperative recurrence (259 cases).

Group 5. Postoperative prophylactic irradiation (263 cases).

GROUP 1: OPERABLE

Although group 1 is small, it reveals the fact that the survival rate for the patients treated by preoperative radiation and interstitial radiation is the same. The rate, however, is less than the conventional rate of

TABLE 3.—Group 3: Inoperable (One Hundred and Fifty-Two Patients)

Type of Treatment	Total Patients	Lost	Dead Before 5 Years	Lived 5 Years or Longer
X N	19	1	17	1 (5%)
X	133	8	114	11 (8%)
	152	9	131	12 (9%)

70 to 75 per cent when surgery alone is used. However, 4 of the patients, who later had radical mastectomy, began treatment with the intention of avoiding surgery and waited six to eighteen months before this was done; by this time they already had nodes in the axilla. These cases are left in group 1, as the aim of the study is to see what effect radiation therapy has on permanent recovery. It is known now that whatever benefit accrues from preoperative irradiation is lost if the time between treatment and operation is unduly prolonged.

The survival rate of those treated by roentgen rays alone, being only 46 per cent, is greatly less than that of those treated surgically. Therefore, the necessity for operation in this favorable group should always be stressed. Should there be a contraindication to operation, the use of interstitial radiation should be considered as preferable to roentgen rays alone. It is further emphasized by a follow-up beyond the fifth year that permanence of recovery is maintained to a greater extent in the surgically treated group.

GROUP 2: OPERABLE

The figures in table 2 speak for themselves. The extent of the disease determines the outcome. The a patients have a recovery rate approaching those in group 1, and this is maintained up to the tenth year, but in the b patients the rate is much lower with

2. Keynes, Geoffrey: The Place of Radium in the Treatment of Cancer of the Breast, *Ann. Surg.* 106: 619-630 (Oct.) 1937.

3. Meland, O. N.: The Place of Interstitial Irradiation in Cancer of the Breast, *Am. J. Roentgenol.* 25: 348-358 (March) 1936.

5 dying from cancer after the fifth year. The combined survival rate is 54 per cent. Survival of the needled patients is about the same as that of those having mastectomy, but here the rate is not maintained, as 5 died of cancer up to the eighth year. The patients receiving only roentgen therapy had a survival rate of 25 per cent, with half of the patients dying from cancer before the tenth year. Taking 30 per cent as the accepted five year rate for the surgically treated patients in this group and comparing it to the 47 per cent who were clinically free from cancer, it is our belief that irradiation has increased the rate of survival materially.

GROUP 3: INOPERABLE

No one but the radiologists say anything about patients falling in group 3; still in this series they are almost as numerous as patients falling into the two favorable groups combined. None of these patients were operated on but were treated by radiation only. Under roentgen therapy alone the survival rate was 8 per cent. I do not say that the patients who have survived are free from cancer, but some are without clinical evidence of disease. They are comfortable and able to lead a useful existence. Of those patients treated with interstitial radiation only, 1 of 19 survived five years. Therefore, in this frankly inoperable group roentgen therapy alone disturbs the patient less and gives a greater chance of longevity.

TABLE 4.—Group 4: Postoperative Recurrent (Two Hundred and Fifty-Nine Patients)

Total Patients	Lost	Dead Before 5 Years	Lived 5 Years or Longer
259	11	220	28 (11%)

GROUP 4: POSTOPERATIVE RECURRENT

In group 4 again are patients in whom the radiologist is much interested, since the group is made up of surgical failures. It represents the end of the road and most often it falls to the radiologist to make the patients mentally and physically comfortable. The results of treatment are given in table 4.

As a result of careful radiation therapy, 28, or 11 per cent, have lived from five to fifteen years after therapy was begun. This represents a salvage obtained in which 88 per cent of the recurrences took place in the first four years after operation. However, 3 per cent of the recurrences took place in patients from the tenth to the twenty-seventh year after operation. It confirms the Lewis and Rienhoff⁴ contention that, no matter how favorable the case or how careful the operation, death from carcinoma may take place years after the conventional five year period of curability has passed. Following up the 28 patients beyond the five year period. I found that 2 died of intercurrent disease, 10 died of cancer from the sixth to the eleventh year after treatment, 4 are living with cancer from the sixth to the tenth year and 12 are living and well, clinically free from cancer, from the sixth to the fifteenth year.

GROUP 5: POSTOPERATIVE PROPHYLACTIC IRRADIATION

Patients falling in group 5 represent a controversial group about whom much discussion has taken place. With the exception of radiologists, who have had a great enough experience and who are in the minority,

4. Lewis, Dean, and Rienhoff, W. F., Jr.: A Study of the Results of Operation for the Care of Cancer of the Breast, *Ann. Surg.* 95: 336-400 (March) 1932.

the consensus, largely surgical, is that postoperative irradiation does not add anything to the five year end results. This view is ably presented by Harrington⁵ and Greenough.⁶ Since the records are not complete, we are unable to separate the patients into groups 1 and 2, but the combined series gives a survival rate of 39 per cent in which the patients are clinically free from cancer. Except for some of our own

TABLE 5.—Group 5: Postoperative Prophylactic Irradiation (Two Hundred and Sixty-Three Patients)

Total Patients	Lost	Dead	Five Year Survivals
263	23	138	102 (39%)

patients, this represents the effort of twenty surgeons, some of whom have had extensive experience in surgery of the breast but many of whom operate on only one or two breasts a year. Furthermore, many patients were referred to the institute with a notation on their history that a radical operation had been done, but the pectoral muscles were found to be intact. It is important for one to bear this in mind, since it represents the "average" surgical material seen in any community, when comparing it to the Mayo Clinic or the Harvard Clinic series, in which a definite fixed surgical technic is maintained. Since we have no control group of our own to compare with the groups in which no postoperative irradiation was given, it is difficult to draw any definite conclusions. Comparing our series with Bartlett's⁷ carefully worked out series, in which he obtained a five year curability of 31 per cent, our results of 39 per cent show that irradiation adds 8 per cent; or, in comparison to the table compiled by Fortmann⁸ from the world literature, in which there is a mean average five year survival of 28 per cent, postoperative irradiation in our series shows an 11 per cent improvement.

SURVIVAL RATE IN CASES IN WHICH DEATH OCCURRED WITHIN FIVE YEAR PERIOD

Before the subject is dismissed, it is interesting to see what the survival rate in months is of patients who have died from cancer within the five year period, according to the method of treatment used. Two hundred and thirteen cases fall in this category (table 6).

TABLE 6.—Survival Rate in Months in Cases of Cancer Deaths Within Five Year Period

Type of Treatment	Group 1		Group 2		Group 3	
	Cases	Survival, Months	Cases	Survival, Months	Cases	Survival, Months
X	13	40	26	23	114	14
XX	4	28	9	23	17	21
XO	7	33	23	22	0	0

These figures in table 6 refute the charge that is sometimes made that irradiation hastens the fatal outcome, for the patients receiving roentgen therapy alone lived longer than those who had either operation or

5. Harrington, S. W.: Carcinoma of the Breast: Surgical Treatment and Results from Ten to Fifteen Years After Radical Amputation, *Surg., Gynec. & Obst.* 56: 438-441 (Feb., no. 2A) 1933.

6. Greenough, R. B.: Five Year Cures of Cancer of the Breast at Massachusetts General Hospital, *Surg., Gynec. & Obst.* 58: 437 (Feb., no. 2A) 1934.

7. Bartlett, E. I.: The Curability of Cancer of the Breast, *West. J. Surg.* 41: 243-254 (May) 1933.

8. Fortmann, U. V.: A Comparison of the Results in a Series of Cases of Carcinoma of the Breast Treated by Postoperative Roentgen Therapy for Prophylaxis with Similar Cases in Which Operation Was the Only Treatment, *Am. J. Cancer* 17: 1-25 (May) 1936.

radium needles supplemented by roentgen therapy. Both of these manipulative procedures contributed to earlier dissemination. While patients in group 3 receiving interstitial irradiation lived longer than those treated by roentgen rays, the facts are that the roentgen ray group included patients with distant metastases, while those treated by interstitial irradiation had inoperable cancer only because of local and supraclavicular extension.

In most articles presented on cancer of the breast, only the favorable cases are discussed. In other words, the operable patients receive the spotlight. I feel that the problem of cancer of the breast should be considered as a whole rather than from the favorable groups only. It must be realized that there are almost as many patients with inoperable as with operable cancers and that roughly 40 per cent of the operable group result in surgical failures. Education to bring the patient in early must go on, but as long as human nature is what it is, and procrastination continues, radiation plays a dominant part in the treatment of these patients. Further, there are facts that cannot be presented statistically, such as pain relief, growth control and the establishment of a degree of mental tranquility from knowing that something is being done. All this radiation offers and does.

While surgery is and will remain the best procedure to offer the operable groups, the survival period of those patients in whom the tumor has spread from the breast itself will be greatly enhanced by irradiation given either preoperatively or postoperatively. In my experience, preoperative irradiation is preferable to postoperative therapy, as it attacks the cancer cell in its natural surroundings. Excepting those patients who are to be treated exclusively by radiation, the aim of the treatment is not necessarily to sterilize the breast and lymph nodes but to inactivate the most actively growing cells so that the manipulation incident to the operation itself will not result in further dissemination. When our 39 per cent five year recoveries in the postoperative series, made up of both groups 1 and 2, are compared with the combined results of 52 per cent in the group in which preoperative irradiation has been used, the evidence points to the superiority of using irradiation before rather than after operation. The greatest drawbacks to preoperative therapy are due to two factors: first, the waiting period between the cessation of treatment until surgery is done and, second, the fear on the part of the surgeon of delayed healing after operation. Despite these objections, if the end results are improved the method is justifiable. The individual variation of surgical end results is apparently great. In the list compiled by Portmann,⁹ the five year results run from 15 to 52 per cent, while in a more recent report issued by the Presbyterian Hospital in New York, surgeons working with the same material have a five year curability of from 6 to 43 per cent. Obviously, some men are cancer surgeons while others are not. The same variability must exist among radiologists. While a competent technician and good equipment are necessary, it requires the careful supervision of a clinician who understands cancer and its mode of spread to get results. I realize that the figures that I have presented are not as high as those submitted by Pfahler,⁹ but this may be because of the fact that I have not recognized the importance of the saturation method of therapy.

9. Pfahler, G. E., and Vastune, J. H.: *Technic and Results of Irradiation in Carcinoma of the Breast*, *Am. J. Roentgenol.* 33: 41-49 (Jan.) 1935.

CONCLUSIONS

When cancer of the breast is considered as a whole and not from the standpoint of the favorable groups, radiation plays a dominant role in its treatment. It contributes to longevity in all groups with the exception of group 1, in which radical removal alone is apparently sufficient. However, in group 2, preoperative irradiation as an adjunct to surgery increases the rate of survival between 15 and 20 per cent. While irradiation alone does not give the results that surgery does, interstitial irradiation approaches it, though permanence of recovery is not maintained after the five year period, as it is when preoperative irradiation and surgery are combined.

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ABSTRACT OF DISCUSSION

DR. U. V. PORTMANN, Cleveland: Dr. Meland has grouped his series according to extent of involvement, which is the proper approach to statistical analysis of the results of different methods of treatment. He has placed patients with "no nodes" involved in group 1. In our experience at the Cleveland Clinic, and according to many reports in the literature, metastases in the axillary lymph nodes from cancer of the breast can be ascertained with certainty in approximately half of the patients subsequently proved to have them, after careful examination of tissues removed from the axilla. In our experience, and that of others, when no axillary metastases are demonstrable, from 80 to 90 per cent of patients survive five years by operation alone. But Dr. Meland finds that only 67 per cent of his group 1 patients having roentgen therapy followed by operations survived five years. Therefore it seems justifiable to conclude that some of his group 1 patients really had unrecognizable metastases; otherwise the survival rate should approximate the average of about 85 per cent. If one is willing to accept a higher surgical curability for patients without microscopic evidences of axillary extension, there is no indication from Dr. Meland's results that preoperative roentgen therapy added to the proportion of five year survivals. Dr. Meland found that exactly the same proportion, that is, 67 per cent, of patients treated by roentgen rays survived as those having preoperative roentgen therapy. It would appear that the radium destroyed the local tumor. However, it also is apparent that some of his group 1 patients had metastases; otherwise the destruction of the breast tumor would have resulted in a higher percentage of survivals. It is obvious from the statistics presented in regard to group 1 patients that the role of roentgen therapy was relatively unimportant. This also is suggested by his experience with roentgen therapy alone, since only 46 per cent survived. It is reasonable to conclude that, since the survival rates in his group 1 and group 2 A patients are the same, preoperative roentgen therapy did not add to the proportion of five year survivals. Fifty-four per cent of his patients in group 2 A and B having axillary metastases and preoperative roentgen therapy survived five years. According to our experience and reports in the literature, about the same proportion of patients having axillary metastases survive that long by operations alone. This also would appear to indicate that the preoperative irradiation did not increase the proportion of survivals.

DR. JOHN E. WIRTH, Baltimore: If I understood correctly, the author said he obtained a 17 to 20 per cent better result by preoperative irradiation. If that is so, I should like to know how he derived those figures and on what they were based.

DR. ORVILLE N. MELAND, Los Angeles: When it comes to the matter of discussing carcinoma of the breast, there is always going to be a difference of opinion. In the group 1 series there were some patients who started with roentgen therapy with the idea of avoiding surgery. As I mentioned, we left them in that group for the simple reason that we wanted to see what roentgen therapy could accomplish. Evidently it did not have any retarding effect, so a number of them who later went to surgery really were in group 2 when they had their operation. As far as the matter of treatment in these cases is concerned, the postoperative and preoperative, the conclusions that one draws from the

literature vary with different individuals. The matter of technic is one of the important factors. The patients mentioned from the Greenough series and the Harrington series were discussed from the point of view that the amount of irradiation was insufficient according to modern standards, which may be true. Answering the other question about the 17 to 20 per cent, it was based on the improvement of average results obtained throughout the country.

EFFECT OF GONADOTROPIC SUBSTANCE ON OVULATION

RESULTS OF THE INTRAMUSCULAR USE OF A PREPARATION OF HIGH POTENCY FROM PREGNANT MARE SERUM

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A gonadotropic substance is one that stimulates the growth and hormonal function of the epithelial elements of the ovary.

Gonadotropic substances have been isolated from various fluids and tissues of the body, such as pregnancy blood serum, spinal fluid, castrate and postmenopausal urine, from the pituitary gland and from the placenta. They have been demonstrated to have two functions: one is stimulation of growth of the follicle and the other is the induction of ovulation and luteinization of the follicle. Gonadotropic substances vary considerably in their ability to stimulate the ovary. Although the characteristic activities have been demonstrated in experimental animals, results obtained with the use of these substances in the human female have not been as satisfactory.¹

Most of the reports indicate that of the many known gonadotropic substances, the one obtained from pregnant mare serum is probably the most effective in stimulating the human ovary. Reports that ovulation has been induced in the human being have been published.² Numerous clinical reports advocate the use of these substances in patients who present sterility problems, in patients with functional bleeding and amenorrhea. A critical survey of these reports leads to the conclusion that, in general, the clinical use of these substances has not been completely satisfactory. Many reasons may account for this. The effectiveness of a gonadotropic substance depends on the induction of ovulation and the maintenance of a normal functioning corpus luteum. It is apparent from the numerous reports that ovulation cannot be induced at will in a given patient. Second, failure of ovulation may not be the primary and essential defect in the endocrine physiology of a given person. Third, the dosage that will always induce ovulation in a given person has not been determined. The dosage requirements are undoubtedly not uniform in a single patient at various times in the cycle, and certainly they would not be uniform in different persons. Fourth, it is possible that failure may at times result from the injudicious choice of the route of administration of the substance. Intramuscular injections

may be unsatisfactory because of the lack of sufficiently potent preparations. Fifth, it is possible, as recent reports suggest, that the administration of a substance with a synergistic action is necessary to enhance the action of a single gonadotropic substance.³

Absolute proof that follicle stimulation, ovulation and luteinization have been produced in the human being by the injection of a gonadotropic substance is difficult to establish. It is essential that microscopic studies of the corpora lutea be made. Exact criteria must be known and accurately applied to determine the age of a given corpus luteum. Even if this is done and the accurately estimated age of a given corpus luteum coincides with the time elapsed between the injection and the surgical removal of the tissue, it is impossible to state with certainty that the medication induced ovulation and luteinization. It is possible only to infer that the ovulation resulted from the medication rather than that it was spontaneously present. Large series of patients must be studied and the corpora lutea must be studied histologically before such inferences could be of unimpeachable value. On the other hand, if the estimated age of the corpus luteum is greater than the time elapsed between injection and operation, it can be stated definitely that the ovulation was not experimentally induced.

Proof of the efficacy of treatment would be more absolute if ovulations could repeatedly be induced during the early and late phases of the menstrual cycle. This is true, since spontaneous ovulations, although they do occur early and late in cycle, are relatively infrequent at these times. Proof could be firmly established by inducing ovulation experimentally in a patient who had ovulated spontaneously and normally shortly before or after treatment. Thus corpora lutea of different ages would exist in the same patient and their respective degrees of development would lend themselves readily to the making of a positive statement that the treatment had produced one of them.

Another aid in the establishment of proof would be the repeated demonstration of superovulation (simultaneous ovulation of more than one follicle) completely beyond the realm of normal probability, both in number and in frequency. Here it rests with the individual author to establish without question of doubt that the multiple corpora lutea are normal and that they are not aberrant corpora, such as luteinized unruptured follicles. This is sometimes extremely difficult. It requires considerable effort and time, since serial section studies of the complete corpora lutea are necessary to permit one to say that ovulation has truly taken place and that an ovum is not imprisoned within. Identification of the stigma or ovulation point is fairly conclusive that ovulation has occurred. In many instances, however, the stigma may have healed and may not be readily discernible.

The fact that ovulation occurs in some patients with functional amenorrhea after treatment with gonadotropic substances does not prove the efficacy of the treatment. These patients are known to ovulate spontaneously. Thus, before claims can be made, one must induce ovulations in a sufficient number of patients to obviate the possibility of coincidence. Ovulation may occur spontaneously also in women during phases of

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From the Departments of Gynecology and Obstetrics and the Henry Baird Favill Laboratory of St. Luke's Hospital and the Department of Gynecology of Northwestern University Medical School.

1. Hamblen, E. C., and Ross, R. A.: *Endocrinology* 21: 722 (Nov.) 1937.
2. Davis, M. E., and Koff, A. K.: *Am. J. Obst. & Gynec.* 36: 183 (Aug.) 1938. Siegler, S. L., and Fein, M. J., *ibid.* 25: 1021 (Dec.) 1939.

J. Leonard, S. L.: *Proc. Soc. Exper. Biol. & Med.* 29: 812 (April) 1932. Engle, E. T.: *Endocrinology* 18: 513 (July-Aug.) 1934. Evans, H. M., Meyer, Karl, and Simpson, Miriam E.: *Am. J. Physiol.* 100: 141 (March) 1932. Engle, E. T., and Hamburger, C.: *Proc. Soc. Exper. Biol. & Med.* 22: 1531 (June) 1935 (table 1). Bittner, William: *Arch. f. Gynäk. u. Gynec.* 162: 487, 1937. Mazer, Charles, and Ravetz, Ekin: *Am. J. Obst. & Gynec.* 41: 474 (March) 1941.

abnormal uterine bleeding. Conclusions must be drawn cautiously when ovulation is observed after injections of gonadotropic substances in such patients.

It is necessary that additional, exact, experimental evidence must be accumulated concerning the effectiveness of the gonadotropic substances in the human female before it is feasible to claim that these substances are of clinical value.

per cubic centimeter. One rat unit is the equivalent of 2 international units.⁷ In table 1 the varying dosages are shown. The lowest amount given to any patient in the series was 600 rat units. This is comparable to 60 Cartland units,⁸ used by Davis and Koff. The dosages ranged up to 5,000 rat units (10,000 international units) in divided doses. The largest single dose was 2,000 rat units.

TABLE 1.—Treated Group

Patient	Age	Menstrual History	Pathologic Condition	Injections Hours Before Operation	Gonadotropic Substance, Cole Saunders Units	Day of Cycle Operated	Corpora Lutea		Stage	Endometrium	Ovulation Induced
							Of Previous Cycle	Of Current Cycle			
1	47	Normal	Residues	43	2,000	1	2	0	Degenerate	Menstruating	No
2	23	Normal	Fibroids	17	600	2	1	..	Degenerate	Menstruating	No
3	45	Menorrhagia	Fibroids and residues	72 48 24	600 200 200	4	1	0	Degenerate	Menstruating, repair	No
4	37	Normal	Fibroids and residues	312	1,200	5	1	0	Degenerate	Repair	No
5	39	Normal	Residues	20	800	9	1	2	Young	Early secretory	No
6	28	Normal	Fibroids	41 26	2,000 2,000	9	1	0	Degenerate	Proliferative	No
7	39	Normal	Fibroids	23	600	11	1	0	Degenerate	Proliferative	No
8	38	Menorrhagia	Fibroids	65	1,000	11	1	0	Degenerate	Proliferative	No
9	30	Normal	Fibroids and residues	21	2,000	12	1	0	Degenerate	Proliferative	No
10	43	Metrorrhagia	Fibroids	42 20	1,000 2,000	13	1	0	Degenerate	Proliferative	No
11	49	Normal	Residues	46 23	2,000 2,000	14	1	0	Degenerate	Proliferative	No
12	38	Metrorrhagia	Fibroids and residues	45 22	1,000 2,000	14	..	2	Bloom	Secretory	No
13	40	Normal	Fibroids	42	1,000	15	..	1	Young	Secretory	No
14	37	Menorrhagia and metrorrhagia	Fibroids	25	2,000	15	..	2	Vascularization	Secretory	No
15	33	Normal	Endometriosis	96 72 24	1,000 1,000 2,000	18	..	1	Young	Secretory	?
16	32	Normal	Fibroids and residues	96 72 48	1,000 2,000 2,000	21	..	1	Bloom	Secretory	No
17	32	Metrorrhagia and menorrhagia	Residues	120 96 72	1,000 2,000 2,000	21	..	1	Bloom	Secretory	No
18	44	Menorrhagia	Fibroids	312 288 264 240	1,000 1,000 1,000 2,000	21	..	2	Bloom	Secretory	?
19	38	Normal	Fibroids and residues	45 27	1,000 2,000	21	..	1	Bloom	Secretory	No
20	37	Normal	Fibroids and residues	266 242 218 170	1,000 1,000 1,000 2,000	21	..	0		Proliferative	No
21	44	Menorrhagia	Fibroids	168 144 120	1,000 2,000 2,000	27	..	1	Beginning regression	Secretory and menstruation	No
22	35	Menorrhagia	Fibroids	68	600	28	..	1	Beginning regression	Secretory and involution	No
23	39	Normal	Fibroids	96 72 48 25	1,000 1,000 1,000 2,000	34	..	1	Bloom	Secretory	No
24	28	Normal	Fibroids	60	600	Pregnant 6 weeks	.	1	Pregnant	Decidual	No

This work was undertaken in an attempt to induce ovulation by using a more highly concentrated pregnant mare serum substance intramuscularly.

MATERIAL AND METHODS

The gonadotropic substance used in this experiment was obtained from pregnant mare serum by the Cole and Hart⁴ method of extraction and is known commercially as "gonadin."⁵ Two concentrations of the substance were used. One solution contained 200 rat units⁶ per cubic centimeter and the other 1,000 rat units

Intramuscular injections were used throughout. Davis and Koff stated they obtained much better results by intravenous injections. This work, therefore, is not identical to theirs, nor should the results presented here be confused in any way with the results of intravenous therapy.

The patients chosen were all to be operated on so that the ovarian tissues and the associated endometrial tissues might be available for microscopic study. The menstrual cycles were for the most part normal or near normal. However, a few patients who had abnormal

⁴ Cole, H. H., and Hart, G. H.: *Am J. Physiol.* **93**: 57 (May) 1930.

⁵ The gonadotropic substance used was supplied by the Cutter Laboratories, Berkeley, Calif.

⁶ Cole, H. H., and Saunders, F. J.: *Endocrinology* **19**: 199 (March-April) 1935.

⁷ Cole, H. H., Pencharz, R. I., and Goss, Harold: *Endocrinology* **27**: 548 (Oct.) 1940.

⁸ Cartland, G. I., and Nelson, J. W.: *J. Biol. Chem.* **110**: 59 (June) 1937.

cycles were chosen in an effort to induce ovulation in the presence of abnormal uterine bleeding. Fifteen patients had normal cycles, 5 had menorrhagia, 2 had menorrhagia and metrorrhagia and 2 had metrorrhagia. One of the 15 patients with normal cycles was six weeks pregnant when she was operated on.

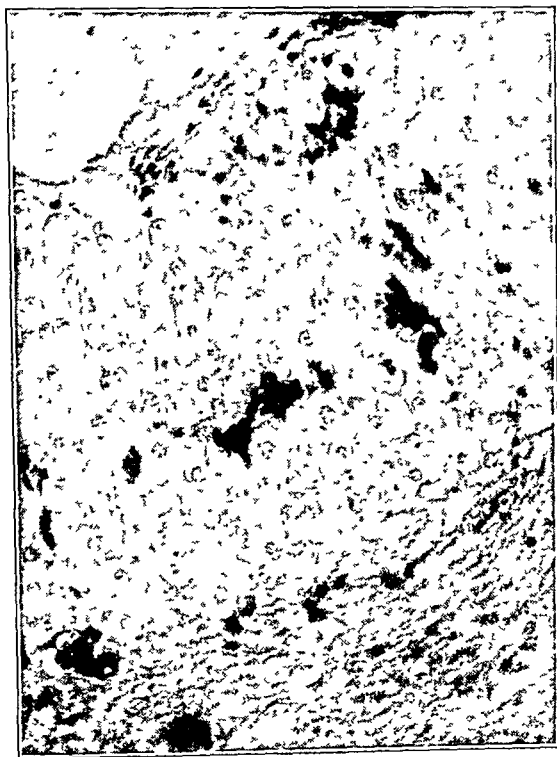


Fig. 1—Patient 5, operated on on the ninth day of her menstrual cycle, was given 800 rat units of gonadotropic substance twenty hours preoperatively. The corpus luteum, which is partly vascularized, is older than 20 hours.

It is apparent that these patients were operated on for pelvic disorders (table 1). It has been demonstrated, however, that pelvic lesions are frequently present in association with normal ovarian and endometrial functions.⁹ It is apparent, then, that ovulation, the development of the corpus luteum and the endometrial responses to ovarian stimulation may be normal in conditions similar to those for which the patients of this report were operated on. Therefore, while the patients studied were not ideally suited to a study of normal function, they were sufficiently suitable to warrant certain conclusions.

It is difficult to control experimental work of this type in the human being. In this work a control group of patients was studied. These patients were chosen because they were near the same age, had similar pelvic disorders and were operated on on the corresponding days of the cycles as patients of the treated group.

TREATED GROUP

Arrangement of the treated patients included in this report into subgroups is desirable for the convenience of study. The first group is composed of 12 patients operated on from the first to the fourteenth day of the menstrual cycle inclusive. The second such group comprises 11 patients operated on from the fifteenth to the thirty-fourth day of the cycle. One patient was operated on during pregnancy.

SUBGROUP 1.—Two of the 12 patients operated on in the first half of their menstrual cycle possessed corpora lutea of the current cycle (table 1). All had regressing corpora lutea of the previous cycle. Patient 5, operated on on the ninth day of her cycle, had two corpora lutea of the current cycle. The age of these corpora lutea is estimated at more than 24 hours and less than 48 hours (fig. 1). A single intramuscular injection of 800 rat units of gonadotropic substance was given twenty hours before operation. Since the age of the corpora lutea, as determined by histologic and cytologic methods, is greater than the time elapsed between the injection and the operation, it is obvious that ovulation in this patient had occurred prior to and was not due to the use of the gonadotropic substance. The endometrium was early secretory in character and was consistent with the degree of development of the associated corpora lutea. That ovulation may occur this early in the menstrual cycle is evidenced by a study of the control group as well as by a study of young human embryo material.

Advocates of the theory that the follicular phase of a given menstrual cycle may vary greatly in length but that the corpus luteum phase is more or less definitely fourteen days in length have support in the findings of this patient. Ovulation must have occurred on the seventh or eighth day of the cycle. If the corpus luteum phase is fourteen days, the onset of menstruation in this patient would be expected on the twentieth or twenty-first day of the current cycle. The menstrual history given by the patient was that she menstruated every twenty-one days for three days. Thus the findings and history correlate very well.

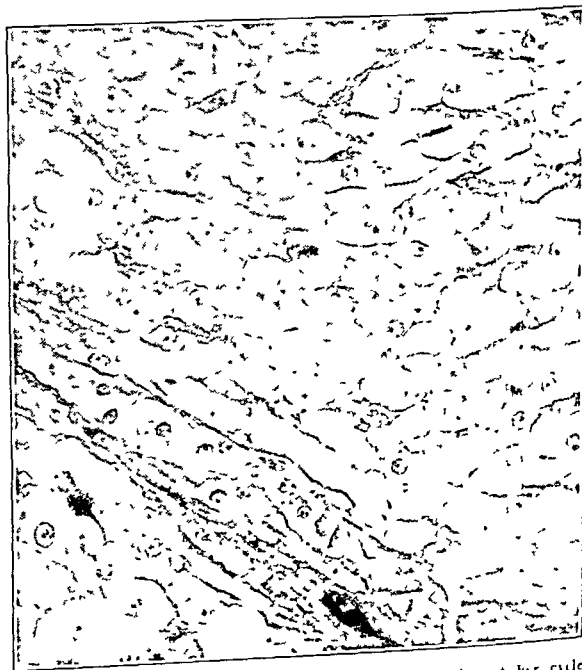


Fig. 2—Patient 12, operated on on the fourteenth day of her cycle had two identical corpora lutea in the stage of bloom. The age is greater than 45 hours, which corresponds to the time preoperatively that the gonadotropic substance was given.

Patient 12 was operated on on the fourteenth day of her menstrual cycle. Two identical corpora lutea were present (fig. 2). The degree of development of the corpora lutea indicates that ovulation had occurred before the injections were given, since the gonadotropic substance (1,000 and 2,000 rat units) was given forty-

⁹ Sammartino, R., and Gandolfo Herrera, R. Rev. med. latinoam. 25: 375 (Jan.) 1940. Brewer, J. I., and Jones, H. O. Am. J. Obst. & Gynec. 41: 733 (May) 1941.

five and twenty-two hours preoperatively respectively. The endometrium is developed to a degree consistent with that of the corpora lutea.

In none of the other 10 patients was there any evidence of recent or induced ovulation. Patient 1 had two identical regressing corpora lutea of the previous cycle.



Fig. 3—Patient 13, operated on on the fifteenth day of her cycle, possessed a corpus luteum in the bloom stage. The injection of the gonadotropic substance could not have induced ovulation, since it was given only forty-two hours before operation.

It is worthy of note that in 3 patients in this group (9, 10 and 11), operated on on the twelfth, thirteenth and fourteenth days respectively, ovulation had not occurred, either spontaneously or as the result of the intramuscular use of a gonadotropic substance.

SUBGROUP 2.—Of the 11 patients comprising this group 1 (20) had not ovulated spontaneously or as a result of the injections when she was operated on on the twenty-first day of her menstrual cycle (table 1). The other 10 patients possessed corpora lutea of the current cycle in various degrees of development.

Patient 13 was operated on on the fifteenth day of her cycle. The corpus luteum was older than the forty-two hours which elapsed between the injection and the operation (fig. 3).

Patient 14 had two identical corpora lutea which were in the vascularization stage and were obviously more than 25 hours old. Two thousand rat units of gonadotropic substance had been given twenty-five hours before the operation.

The corpus luteum of patient 15 was 3 to 4 days old, and, since the first injection of 1,000 rat units of gonadotropic substance was given ninety-six hours before the operation, it is probable that ovulation occurred within that span of ninety-six hours. That the injections induced the ovulation cannot be claimed or denied, since there is no possible way of proving it one way or the other. Ovulation could be expected to occur normally at this time in the cycle.

Patient 16, operated on on the twenty-first day of her cycle, had a corpus luteum in the stage of bloom that was considerably older than 96 hours, which corresponds with the time before operation that the first injection was given.

Patient 17 had a corpus luteum in the bloom stage and an endometrium that showed beginning involution. The latter is indicative of the onset of menstruation within two or three days. Thus it does not appear possible that ovulation had occurred within one hundred and twenty hours (five days) prior to the operation. The injected gonadotropic substance does not seem to have played a part in the process of ovulation in this patient.

In patient 18 injections of the gonadotropic substance were begun three hundred and twelve hours (thirteen days) prior to the operation, which was performed on the twenty-first day of her cycle. A study of the two identical corpora lutea indicated that ovulation had occurred within this thirteen day span. Again, however, one cannot claim or deny the effect of the injected material on the ovaries.

Patient 19 was operated on on the twenty-first day of her cycle. The corpus luteum was in the stage of bloom and the endometrium was secretory in character. The age of the corpus luteum is greater than the forty-five hours elapsing between the first injection and the operation. This fact indicates that ovulation did not result from the medication.

The corpus luteum of patient 21, operated on on the twenty-seventh day of her cycle, was in the late bloom stage and the endometrium showed involution and early menstrual changes. Ovulation in this patient had undoubtedly occurred more than one hundred and sixty-eight hours (seven days) prior to the operation.

Patient 22 was operated on on the twenty-eighth day of her cycle. The corpus luteum was in the late bloom stage. The endometrium had undergone involution.

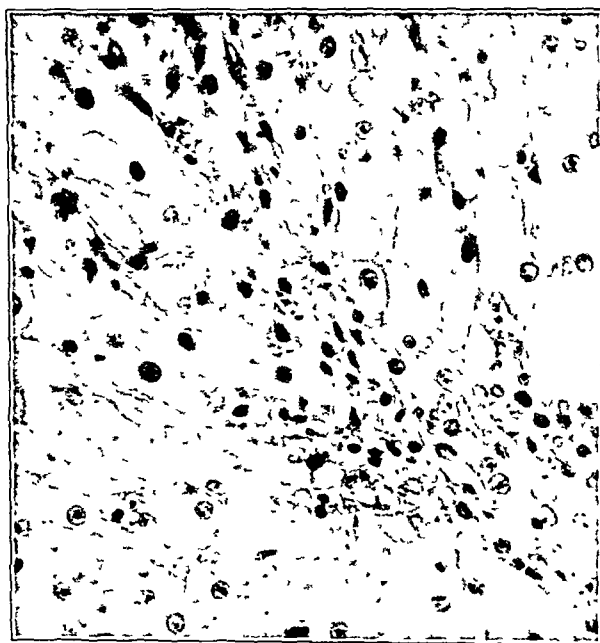


Fig. 4—The corpus luteum removed from patient 23 on the thirty-fourth day of the cycle was in the stage of bloom. It is not probable that the gonadotropic substance given ninety-six hours prior to operation had induced ovulation in this instance.

Since the gonadotropic substance was given only sixty-eight hours prior to operation, it is obvious that it played no part in the process of ovulation in this patient.

Patient 23 had menstrual cycles of twenty-eight days' duration, but the current cycle had lasted thirty-four days when she was operated on. Injections of the

gonadotropic substance were begun ninety-six hours prior to operation. The corpus luteum was in the bloom stage (fig. 4) and the endometrium was correspondingly developed. It is not probable that the gonadotropic substance was important in inducing ovulation in this patient.

Patient 24 was operated on at six weeks of pregnancy. No new corpora lutea were present. A single injection of 600 rat units of the gonadotropic substance was given sixty-nine hours before operation.

In most instances there was increased vascularity and, in some instances, hemorrhages in the ovarian tissues,

TABLE 2—Control Group

Patient	Age	Menstrual History	Day of Cycle Operated	Corpora Lutea of Current Cycle	Stage	Endometrium	Pathology
1	26	Normal	1	0	.	Menstruating	Salpingitis
2	41	Normal	2	0	.	Menstruating	Fibroids
3	45	Normal	4	0	.	Menstruating	Fibroids and residues
4	45	Normal	9	0	.	Proliferative	Fibroids and adenomyosis
5	46	Normal	11	0	.	Proliferative	None
6	38	Slight menorrhagia	11	1	Young	Secretory	Fibroids
7	32	Normal	12	0	....	Proliferative	Fibroids
8	37	Normal	13	1	Young	Secretory	Slight residues
9	40	Normal	14	1	Young	Secretory	None
10	37	Normal	14	1	Young	Secretory	Fibroids
11	40	Normal	15	2	Young	Secretory	Fibroids
12	35	Normal	15	1	Young	Secretory	Endometriosis and fibroids
13	46	Normal	18	1	Vascularization	Secretory	Fibroids
14	40	Normal	21	1	Bloom	Secretory	Fibroids
15	42	Normal	21	1	Bloom	Secretory	Fibroids
16	37	Normal	21	1	Bloom	Secretory	Fibroids
17	35	Menorrhagia	21	1	Bloom	Secretory	Fibroids and endometriosis
18	34	Normal	21	1	Vascularization	Secretory	Fibroids
19	46	Menorrhagia	27	1	Bloom	Secretory	Fibroids
20	34	Normal	28	1	Degenerative bloom	Beginning menstruation	Fibroids and residues
21	40	Normal	32	1	Bloom	Secretory	Fibroids, follicular cyst
22	41	Normal	39	1	Vascularization	Secretory	Fibroids

particularly about the larger follicles but also about the corpora lutea. Similar hemorrhaging has been reported to occur in the ovaries of the human being and the monkey following gonadotropic therapy. Increased follicle atresia and degenerated changes in follicles were not observed.

CONTROL GROUP

The control group comprises 22 patients whose ages, menstrual histories and pelvic disorders approximate those of the experimental group as closely as possible (table 2). Ten of these patients were operated on on or before the fourteenth day of their menstrual cycle. Two patients (2 and 5) had twin corpora lutea in the regression phase that were no doubt formed in the preceding cycle. They were operated on on the second and eleventh days, respectively. One patient (6) operated on on the eleventh day had a young corpus luteum whose degree of development indicated that ovulation

had occurred on the ninth or the tenth day. Three other patients on the thirteenth and fourteenth cyclic days possessed young corpora lutea.

All 12 patients operated on on or after the fifteenth cyclic day had normal corpora lutea. One patient (22) was operated on on the thirty-ninth day of her cycle. In this patient the development of the corpus luteum, which was in the vascularization stage, indicated that ovulation had occurred spontaneously about the thirtieth day.

COMMENT

In the treated group of 24 patients, 13 possessed corpora lutea of the current cycle. This number includes the 1 patient who was pregnant and who possessed a normal corpus luteum of pregnancy. A microscopic study of the corpora lutea of 11 of these 13 patients indicates definitely that ovulation could not have occurred as a result of the intramuscular injection of the gonadotropic substance. The estimation of the ages of the corpora lutea and the duration of time elapsing between the injections and the surgical removal of the corpora lutea were used as the basis for this statement. In 2 instances (patients 15 and 18) ovulation undoubtedly occurred within the time limits noted. This fact alone, however, cannot be construed to mean that the ovulation resulted from the medication. It is most probable that ovulation would have occurred spontaneously in these 2 patients at this time in their cycles regardless of the medication.

In the control group of 22 patients, 16 patients possessed corpora lutea of the current cycle. This compares favorably with the 13 patients with corpora lutea in the treated group. This comparison is significant, since approximately an equal number of patients of each group were operated on in the first and last halves of the menstrual cycle. There was no demonstrable increase in the incidence of ovulation in the treated group. The number of patients studied is too small to permit definite conclusions, but the consistent results merit some value.

Ovulation was not induced in the treated patients either early or late in the cycle. In 2 patients (5 and 12) ovulation had occurred early in the cycle (table 1), but in both the ovulation was spontaneous. In the control group 1 patient (6) had ovulated at a similar early period (table 2). Ovulation relatively late in the cycle was observed in 1 patient of the treated group (23), but here again it was undoubtedly spontaneous. That ovulation does occur late in the cycle is an established fact and is well borne out by the observation on 2 patients (21 and 22) in the control group who ovulated late in the cycle.

The simultaneous induction of ovulation of more than one follicle was not brought about as a result of the therapy. Four patients in this group of 24 treated patients had simultaneous ovulations of two follicles in the current cycle. In only 1 patient (18) did the bare possibility exist that the gonadotropic substance induced the ovulation. This single instance cannot be considered too strongly in an evaluation of the effectiveness of the treatment. In 1 patient (1) double ovulation had occurred in the preceding cycle. In no instance was superovulation induced beyond the realm of normal probability. Two simultaneous ovulations were the greatest number observed. In the control group of 22 patients, two identical corpora lutea of the current cycle were present in the ovaries of 1 patient. Double ovulation had occurred during the immediately previous cycle in 2 patients (2 and 5). The similar frequency of

double ovulations in the patients of the control group and the treated group makes it seem likely that the incidence in the treated group was a matter of coincidence rather than a result of treatment.

An attempt failed to induce ovulation before or after spontaneous ovulation. In the ovaries of no patient were there corpora lutea of different ages or degrees of development.

In the control group no patient operated on after the thirteenth day had failed to ovulate spontaneously, whereas in the treated group 1 patient operated on on the thirteenth day, 1 on the fourteenth day and 1 on the twenty-first day had failed to ovulate either spontaneously or as a result of the injected gonadotropic substance. This again is undoubtedly a matter of coincidence and without significance with respect to the treatment received. It cannot be concluded that the treatment in these particular patients prevented ovulation.

Adhering strictly to the criteria and the ideal conditions elaborated on, which are necessary to establish absolute proof that ovulation has been induced in the human being by a gonadotropic substance, we must state that ovulation was not induced in the patients of this report. In no respect can conclusions be drawn from the results of this report concerning the effects of gonadotropic substances administered intravenously as reported in the literature.

Since little is known concerning effective dosages of gonadotropic substances, it is possible that in this work the correct, effective dose was not given at the correct time. This might account for the failure to induce ovulation. It has been stated that large dosages produce luteinization of unruptured follicles but will not induce ovulation. In the specimens of this study luteinization of follicles beyond normal was not present. This suggests that the dosages were not too large.

CONCLUSIONS

1. Intramuscular injections of a pregnant mare serum gonadotropic substance of high potency failed to induce ovulation in 22 of the 24 patients studied. In the other 2 patients it is impossible to prove or disprove that ovulation occurred as a result of the injected substance.

2. Multiple ovulations were not induced.

3. No new ovulation superimposed on spontaneous ovulation was induced.

4. Ovulation occurred more uniformly in the 22 patients of the control group than in the 24 patients of the treated group.

104 South Michigan Avenue.

Yellow Fever.—The first recognized account of yellow fever is that given by Père Jean Baptiste Du Tertre (1667-1671) of the outbreak which he himself witnessed in the island of Gaudeloupe in 1648. A few months later, Diego Lopez De Cogulludo (1688) described an epidemic with similar characteristics in Yucatan. Since Carter (1931) published his epidemiologic and historical study of the place of origin of yellow fever, much has been learned not only of the nature of the disease but of the circumstances attending the outbreak of yellow fever in 1648. These observations are in favor of the view that infection was brought to the West Indies from the West Coast of Africa, either to Barbados or less probably to St. Christopher, whence it spread to Yucatan and to Havana.—Findlay, G. M.: *The First Recognized Epidemic of Yellow Fever*, *Tr. Roy. Soc. Trop. Med. & Hyg.*, November 1941, page 143.

A COMPARATIVE APPRAISAL OF THREE CONTRACEPTIVE SERVICES

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Obstetricians, gynecologists and public health officers agree that the woman with serious systemic disease who becomes pregnant, when pregnancy constitutes an additional health hazard, contributes heavily to maternal morbidity and mortality. In advising his patients about the prevention of pregnancy, however, the physician is somewhat hampered by the fact that, because of inadequacies in the statistical techniques used, much of the published material in the field of contraception has failed to give a reliable comparative evaluation of the effectiveness and acceptability of available methods.¹ In most instances, therefore, physicians have confined their advice on contraception either to blanket advice "not to become pregnant" or to the prescription of the occlusive diaphragm with jelly, a method which has been almost universally prescribed in contraceptive clinics.

In an attempt to learn just how various types of people have been served by existing contraceptive services and to evaluate the relative effectiveness of various contraceptive techniques, three studies of contraceptive clinics in different sections of the United States have recently been completed by the Milbank Memorial Fund. One, the Birth Control Clinical Research Bureau (now the Margaret Sanger Research Bureau of the Birth Control Federation of America), is in New York City. The other clinics are both independent of the Birth Control Federation. One, the Cincinnati Maternal Health Clinic, operates under the supervision of the local Academy of Medicine; the other is a referral service in the Spartanburg General Hospital in Spartanburg, S. C., and is a regular clinic of the Spartanburg County Department of Health.

THE RECORDS USED FOR STUDY

The records and methods of study differed slightly for the three clinics, but essentially the same information was available for the families in all three regions. In New York, 991 women from the Bronx who attended the clinic between Jan. 1, 1931 and June 30, 1932 were interviewed in their homes by me between one and two years after their initial contact with the clinic.¹ In Cincinnati, 1,621 women who had attended the clinic in the five years between its inception in November 1929 and Dec. 31, 1934 were interviewed in their homes by a trained nurse in 1935 and 1936.² In Spartanburg, detailed records were secured for the first 990 patients attending the clinic, which opened in July 1935.³ Complete follow-up records were kept as patients returned, while for those who failed to return in 1939 and had not moved away the records were completed by means of home visits.

Each record contained social and economic information and a complete and detailed fertility history for the period between marriage or first coitus and the date of interview. It included the date and type of termination of each pregnancy, information concerning any morbidity associated with it, and data on the use of contraception which preceded it. In New York, medical

From the Milbank Memorial Fund.

1. Stix, Regine K., and Notestein, Frank W.: *Controlled Fertility*, Baltimore, Williams & Wilkins Company, 1940.

2. Stix, Regine K.: *Birth Control in a Midwestern City*, Milbank Memorial Fund Quarterly 17: 69 (Jan.), 152 (April), 392 (Oct.) 1939.

3. Stix, Regine K.: *Contraceptive Service in Three Areas*, Milbank Memorial Fund Quarterly 19: 171 (April), 304 (July) 1941.

information was limited to that elicited for the fertility history. In Cincinnati, each record included a brief medical history and data on the pelvic examination given the patient on her initial clinic visit. In Spartanburg, the method of referral permitted the inclusion of detailed information from the pelvic examination given each patient, the diagnosis made at the referring clinic and the results of laboratory procedures, which included a blood test for syphilis, cervical and urethral smears and a urinalysis.

THE PATIENTS OF THE THREE CLINICS

The patients of the three clinics were very different. The women who attended the Clinical Research Bureau, in New York City, were mainly foreign-born Jewish women from families with moderate incomes. Most of them came to the clinic on their own initiative and paid for the service given them. In Cincinnati, most of the patients were relief recipients or wives of manual workers with small incomes who, because their families were large and the mothers needed to be spared the burden of additional pregnancies, were referred for contraceptive advice by social workers or physicians. The patients selected for study in New York City and Cincinnati were all white women; in Spartanburg, however, nearly half were Negroes. The Spartanburg clinic serves women from rural and urban sections of a Southern cotton county. Its patients are sent to the clinic mainly because of illness contraindicating further pregnancy. Those referred during the period of study were the wives of urban manual workers, of sharecroppers and of farm tenants, whose economic status was very low.

The outstanding differences between the patients in the three areas are evident in the reasons for their seeking contraceptive advice. The New York women were concerned about controlling their fertility and were

before they attended the clinics, are shown in chart 1.⁴ These rates show the usual economic, social and regional differentials. The Spartanburg Negroes had the highest birth and pregnancy rates, the New York clinic patients the lowest.

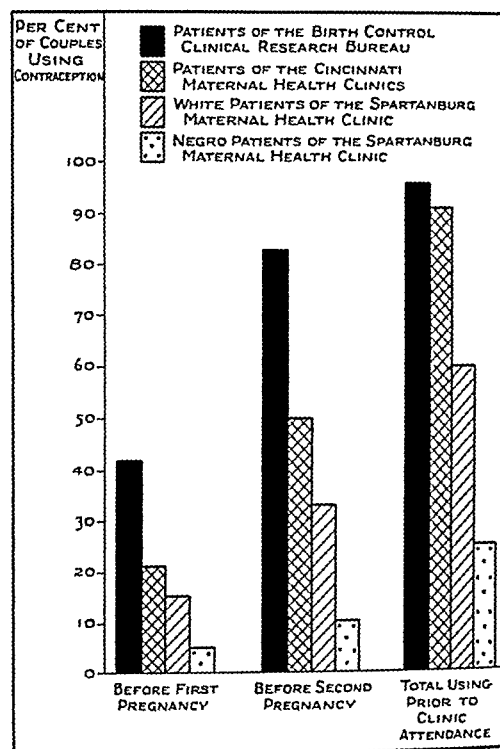


Chart 2.—Proportions of couples in three areas who were using contraception at various periods before the wives attended a birth control clinic.

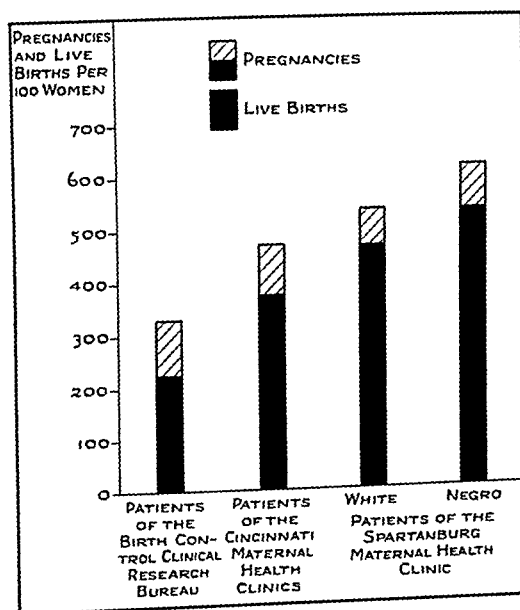


Chart 1.—Pregnancy and birth rates per hundred women for four groups of women prior to clinic attendance (rates standardized for age).

willing to pay for expert contraceptive advice. The women in Cincinnati and Spartanburg were referred for advice mainly because their physical condition or economic circumstances contraindicated further pregnancy, at least temporarily.

The birth and pregnancy rates per hundred women of the three groups of white and one of Negro women,

It is well known that the most important factors associated with group differences in fertility are differences in the prevalence and effectiveness of contraception and in the extent of illegal abortion.⁵ In order to determine the influence of these factors in the experience of the women under consideration, it is necessary first to determine what differences there were in the rates at which they conceived during those periods when there was no attempt to use contraception.

The mean number of months of exposure to the risk of pregnancy for each pregnancy experienced is a measure of the average frequency with which women in the three areas conceived.⁶ When no attempt was made to use contraception, the New York women conceived much more rapidly than the women in any of the other groups. The Cincinnati women, in turn, conceived more rapidly than either group of Spartanburg women (table 1). The first pregnancies of women in New York who used no contraception were conceived about four months after marriage. For the other groups the interval was nearly twice as long. After the first pregnancy the average period free of pregnancy for each pregnancy experienced was considerably longer for all

4. The rates are standardized to the age distribution of all married women 15-44 years of age in the 1930 census. Women under 15 and over 44 years of age were excluded from the tabulations.
5. Pearl, Raymond: *The Natural History of Population*, New York, Oxford University Press, 1939, p. 244. Stix and Notestein.¹ Stix.
6. Exposure to the risk of pregnancy covers that period of a woman's life between menarche and menopause during which she is habitually indulging in coitus, as in marriage, and is not pregnant. The mean number of months of exposure was derived by dividing the aggregate number of months of exposure by the number of pregnancies occurring in the exposure. See also Stix and Notestein: *Controlled Fertility*, pp. 111 and table 16.

groups. The group differences for the later pregnancies were smaller than for first pregnancies, but the intervals were shortest for the New York group and longest for the Spartanburg women. It is obvious, therefore, that the high pregnancy and birth rates of the Southern women were not associated with "biologically superior" uncontrolled fertility.

The group differences in uncontrolled fertility may be attributed mainly to two factors: the first, a tendency toward prolonged lactation among the Spartanburg women, and the second, the fact that the types of pathologic condition which might be expected to interfere with fertility were least prevalent in New York and most prevalent in Spartanburg. In all three areas the women with evidence of pelvic infection, endocrine disease or syphilis conceived much less rapidly than women free from pathologic conditions.⁷

The differences in the total preclinic fertility of the four groups under discussion could in no way be considered due to differences in "biologic capacity," because the group with the lowest birth rates had the highest uncontrolled fertility and the groups with the highest birth rates the lowest uncontrolled fertility. The differential prevalence and effectiveness of contraception are, therefore, the next factors to be considered.

The periods at which couples first turned to the use of contraception differed in the three areas (chart 2). The New York couples used contraception earlier and more extensively than any of the others. About 85 per cent of them had started to use contraception before the wives became pregnant for the second time. Only 25 per cent of the Negroes had ever used contraception before they attended the maternal health clinic.

During their use of contraception each group of women conceived much less rapidly than when no contraception was used. The average period free from pregnancy for each pregnancy experienced was much longer for each group than the average period when no contraception was used (table 2). For women using contraception from marriage, the mean number of

from twenty-one months for Negroes to nearly four years for the New York women.

In New York the use of contraception prevented 79 per cent of the pregnancies that would have occurred if the women had used no contraception for an equal period of exposure; in Cincinnati its use reduced the risk of pregnancy by 52 per cent; among the Spartan-

TABLE 2.—Mean Number of Months of Exposure per Pregnancy for the Experience with Contraceptives of Four Groups of Women Prior to Clinic Attendance

Order of Pregnancy	White Patients of:			Negro Patients of	
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	Spartanburg Maternal Health Clinic	
Mean Number of Months of Exposure per Pregnancy					
First pregnancies....	29	17	19	11	
All later pregnancies..	44	22	28	21	
Exposure in Months and Number of Pregnancies					
	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.	Exp. Mo.
First pregnancies....	5,085	174	4,330	254	934
All later pregnancies..	63,838	1,459	73,635	3,379	13,635
					484
					218
					22
					3,493
					170

burg white women the reduction was 47 per cent, and among the Negro women 28 per cent (table 3).

These differences in effectiveness were due partly to a variation in the types of contraception used in each area and partly to differences in the effectiveness with which each type was used. Table 4 shows the distribution, in the total exposure with contraceptives, of the types of contraception used by each group, and table 3 the effectiveness with which each of the three most commonly employed methods reduced the risk of pregnancy for each group of women.

The condom and coitus interruptus were the methods most frequently used by the white couples in all three areas. The most frequent choice of the Negro couples was the douche. The New York couples used each contraceptive with much greater effectiveness than any of the other groups.⁸ The effectiveness of the condom was high both in Cincinnati and in New York. In Spartanburg, however, its use reduced the risk of pregnancy for the white women by only 50 per cent. Because most of the Spartanburg couples who used condoms found them too expensive to use regularly, the periods of reported condom use include, in many cases, only sporadic use of the contraceptive. The effectiveness of both coitus interruptus and the douche was fairly high for the New York couples but quite low in both Cincinnati and Spartanburg.

In addition to the differences in the prevalence and effectiveness of contraception in the preclinic experience of the four groups of women under consideration, differences in the proportions of their pregnancies terminating in live births had a definite influence on their birth rates (see solid bars in chart 1). Chart 3 shows, for each group of women, the proportions of pregnancies terminating in live births, illegal abortions and other pregnancy wastage.⁹ Nearly one fourth of the pregnancies of the New York women were terminated by illegal abortion. Only 8 per cent of the pregnancies of the Cincinnati women and less than 1 per cent of the

TABLE 1.—Mean Number of Months of Exposure per Pregnancy for the Noncontraceptive Experience of Four Groups of Women Prior to Clinic Attendance

Order of Pregnancy	White Patients of:			Negro Patients of	
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	Spartanburg Maternal Health Clinic	
Mean Number of Months of Exposure per Pregnancy					
First pregnancies....	4	7	7	8	
All later pregnancies..	11	13	17	15	
Exposure in Months and Number of Pregnancies					
	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.	Exp. Mo.
First pregnancies....	2,793	540	8,051	1,121	3,224
All later pregnancies..	3,883	341	20,357	1,583	20,362
					1,223
					15,667
					1,223

months of exposure for each first accidental pregnancy was eleven months for Negro women, about a year and a half for white women in Cincinnati and Spartanburg, and nearly two and a half years in New York. After the first pregnancy the average period free from pregnancy for each accidental pregnancy experienced ranged

7 Stix, Regine K. The Medical Aspects of Variations in Fertility. *Am. J. Obst. & Gynec.* 35: 571 (April) 1938; Factors Underlying Individual and Group Differences in Uncontrolled Fertility, *Milbank Memorial Fund Quarterly* 18: 239 (July) 1940; Syphilis and Uncontrolled Fertility. *Am. J. Obst. & Gynec.* 42: 296 (Aug.) 1941.

8 Experience with contraceptives, for all the groups under consideration, includes all attempted use of contraception. If some members of a group used a contraceptive only sporadically, their experience was included in the group exposure with that contraceptive. See also Stix and Notestein. *Controlled Fertility*, p. 121.

9 Stillbirths, spontaneous abortions and therapeutic abortions.

pregnancies of the Spartanburg white women were so terminated. There were almost no illegal abortions among the Negro women; they had a high rate of stillbirth and spontaneous abortion, however, because of the high prevalence of syphilis in the group.¹⁰ For the white

Many of them lived in crowded homes under conditions which made the regular use of any contraceptive extremely difficult. In addition to furnishing them with effective contraceptive technics, the Cincinnati clinic had the responsibility for educating many of them to the regular use of contraception.

These problems were intense at that clinic had an even greater. Few of the patients had ever used effective contraception. In almost half the cases serious illness made further pregnancy dangerous to the life and health of the mother. Social and economic handicaps were even greater for these women than for the Cincinnati patients. It was imperative that they learn to use contraceptives consistently and effectively if they were to be spared the hazards of serious illness or death.

THE CLINIC SERVICES AND THE MEASUREMENT OF THEIR EFFECTIVENESS

The policies of the three clinics were alike in that an occlusive rubber device, usually a diaphragm, and jelly

TABLE 3.—Ratio of Effectiveness* of Each Type of Contraception Before Clinic Attendance for Four Groups of Women

Type of Contraception	White Patients of:			Negro Patients of
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	Spartanburg Maternal Health Clinic
Total.....	79	52	47	23
Condom....	86	81	50	43
Coitus interruptus..	78	45	53	†
Douche. . .	61	25	23	15

* Ratio of pregnancies prevented to those expected had no contraception been used. For method of computation see Stix and Notestein *Controlled Fertility*, pp 58-59, table 23.

† Insufficient exposure.

women in all three areas the proportion of pregnancies terminating in stillbirths and spontaneous abortions ranged between 8 and 12 per cent. For the Negro women it was 16 per cent.

This analysis of the factors associated with the differences in the preclinic fertility of four groups of birth control clinic patients shows the results of differences in the attitudes of these women toward the problem of controlling their fertility. Such attitudes should determine to a great extent the policies of the clinics from which they seek advice.

The New York women who came to the Clinical Research Bureau were thoroughly familiar with a number of contraceptive technics, and as a group they had used them with considerable effectiveness. It was quite unnecessary to educate most of them to the use of contraception. They sought and obtained advice on

TABLE 4.—Proportion of Each Type of Contraceptive Practice in the Preclinic Exposure with Contraception of Four Groups of Women

Type of Contraception	White Patients of:			Negro Patients of
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	Spartanburg Maternal Health Clinic
Total Number of Years of Exposure with Contraception				
	5,743.5	6,498.4	1,215.8	311.8
Percentage of Exposure with Each Type				
Total.....	100.0	100.0	100.0	100.0
Condom....	31.4	23.9	32.3	25.1
Coitus interruptus..	36.4	35.8	29.0	11.3
Douche.....	5.4	23.0	17.1	49.7
All other contraceptive tion *.....	26.8	17.3	21.6	13.9

* Includes safe period, suppository, pessary, sponge, and so on, as well as all alternations of two or more contraceptives.

technics which would presumably be more acceptable to them than the contraceptives they had used previously.

Commercial contraceptives were less accessible to the women who attended the Cincinnati Maternal Health Clinics than to the New York patients because most of them were too poor to buy reliable contraceptives.

10. Thirty-one per cent of the Negro women had positive Wassermann and/or Kahn reactions. For proportions of pregnancies terminating in stillbirths and spontaneous abortions for the Negroes with syphilis, as compared with those without, see Stix: *Syphilis and Uncontrolled Fertility*, table II.

TABLE 5.—Types of Contraception Prescribed for the Patients of Three Clinics

Contraceptive Method Prescribed	White Patients of:			Negro Patients of
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	Spartanburg Maternal Health Clinic
Number of Women				
	991	1,609	530	437
Percentage for Whom Each Method was Prescribed				
Diaphragm and jelly..	79.0	98.0	89.6	92.6
Cervical cap and jelly	14.7	..	..	..
Condom and jelly....	1.6	..	0.8	0.2
Sponge and jelly or powder..	2.4	..	1.3	2.6
Jelly alone. . .	2.2	2.0	0.2	..
Diaphragm and/or sponge....	..	..	4.0	4.4
Diaphragm and/or condom . . .	..	..	2.8	..
Other . . .	..	..	0.4	0.2

to be used by the wife, were prescribed for 90 per cent or more of the patients of each clinic (table 5). Contraceptives of this type have usually been considered the only methods suitable for prescription. The use of a contraceptive involves highly personal problems, however, and it seems unlikely that a single type of contraception could be acceptable to all the couples for whom it is prescribed. For this reason the wisdom of such a single minded policy, which makes little or no allowance for individual or group differences, is open to question.

In order to ascertain the results of these policies, it is necessary not only to know the effectiveness of the prescribed technics in preventing pregnancy for those women who use them but also to learn how many patients never use the prescribed contraceptives, how many continue to use them for as long as their experience is known and how many use them and then give them up. It is also important to know about the subsequent practice of couples who reject the prescribed technics.

In all three of the areas under consideration, the contraceptives prescribed by the clinics proved highly effective. For those patients who used them, the prescribed contraceptives reduced the risk of pregnancy by between 80 and 94 per cent (table 6). The ratios of effectiveness were lowest for the Spartanburg women and highest for the New York clinic patients. It is not

surprising that the Spartanburg patients were less skillful in using the diaphragm than the average patient in New York or Cincinnati. The effectiveness with which it was used in Spartanburg was approximately the same as that observed for relief recipients in Cincinnati.¹¹ It is probable that women in both groups were not only handicapped by the conditions under which they lived but were also poorly equipped by education and intelligence to use a complicated contraceptive technic consistently and correctly.

Not all women were willing to use the prescribed contraceptives. Table 7 shows the proportions of women in each group of clinic patients who never used them, who used them for a time and then discarded them and who were using them at the time they were interviewed. In spite of a longer average postclinic period in Cincinnati, with a correspondingly greater opportunity for the rejection of the prescribed methods, the proportions of women using the prescribed contraceptives in any form when their records were closed were significantly higher in both Cincinnati and Spartanburg than in New York.¹²

The differences between the New York and the Cincinnati patients were even greater when the proportions using the prescribed contraceptives at equal intervals

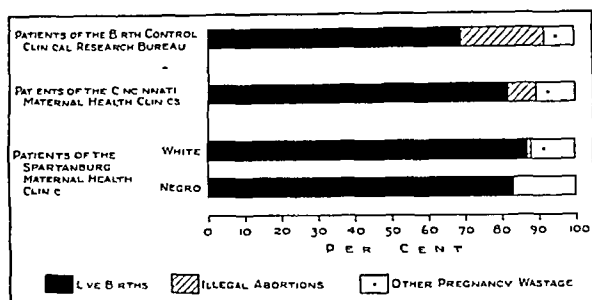


Chart 3—Proportion of pregnancies terminating in live births, illegal abortions and other pregnancy wastage for four groups of women prior to clinic attendance

following the initial clinic contact are compared. Chart 4 shows, for the four groups, the proportions of women still in need of contraception who were using the prescribed contraceptives at successive intervals during the first year following their initial contact with the clinic. In all three clinics the most rapid loss of patients occurred within a brief period after the first clinic contact. A year after they had first sought expert contraceptive advice, the proportions of women in the three areas who were using the contraceptives given them ranged between about 55 per cent for the New York patients and for the Spartanburg Negroes, and 68 per cent for the Cincinnati women. Had it been possible to compute similar figures for the lost as well as for the interviewed patients, the proportions using the methods advised would have been considerably lower for all groups.

A variety of reasons were given for the rejection of the prescribed methods, but it should carry considerable weight with physicians and clinic administrators that

30 per cent of the New York women, 24 per cent of the Spartanburg Negroes and about 20 per cent of the women in each of the other groups gave up the diaphragm because it was uncomfortable, difficult to place, esthetically unacceptable or too much trouble to use.

TABLE 6—Per Cent of Effectiveness of Each Type of Contraception as Used by Four Groups of Women After Clinic Attendance*

Type of Contraception	White Patients of:			Negro Patients of Spartanburg Maternal Health Clinic
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	
All contraception	93†	85	81	75
All use of clinic prescription	94	90	81	80
Exclusive use	93	92	84	83
Use of variants††	96	94	70	68
All other contraceptives	91‡	72	81	55

* Ratio of pregnancies prevented to those expected, had no contraception been used.

† These ratios are slightly higher than those shown in Stix and Note stein: Controlled Fertility, table 49, because those in table 49 were standardized to the period of married life distribution of all exposures with postclinic contraception, and those presented here were not so standardized.

‡ Alternate use of clinic prescription and other contraceptives or no contraception, or use of only part of the clinic prescription.

It has been shown in table 7 that between 45 and 57 per cent of the women who sought advice from each clinic either never used the contraceptives given them or ceased using them before the follow-up study was undertaken. Some of these women turned to the use of other contraceptives; some abandoned the use of contraception entirely. Table 8 shows the proportions of couples with each pattern of contraceptive practice

TABLE 7—Proportions of Patients of Three Clinics Who Never Used the Prescribed Contraceptives, Who Used Them and Then Abandoned Them and Who Were Using Them at the Time Their Records Were Closed

Use of Clinic Prescription	White Patients of:			Negro Patients of Spartanburg Maternal Health Clinic
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	
	Total Number of Women in Need of Contraception at Closing Date			
	943*	1,410†	412‡	371§
Percentage in Each Category				
Never used	12.0	2.7	10.2	11.3
Discontinued .	45.2	44.7	34.5	57.2
Using at closing date	42.8	52.5	55.3	31.5

* Total exclusive of 22 women whose exposure had ceased and 20 women who gave up the use of clinic prescription because they were planning pregnancy.

† Total exclusive of 146 women whose exposure had ceased and 56 women ill or planning pregnancy.

‡ Total exclusive of 79 women whose postclinic experience was unknown, 2 women not fitted, 35 women whose exposure had ceased and 2 women planning pregnancy.

§ Total exclusive of 67 women whose postclinic experience was unknown, 18 women whose exposure had ceased and 1 woman planning pregnancy.

after the wives had been advised at the clinics. The proportions using no contraception either throughout the postclinic period or after they had given up the clinic prescription were very low in New York and Cincinnati and very high in Spartanburg. Thirty-nine per cent of the Negro and 23 per cent of the white women in Spartanburg had given up any attempt to use contraception by the time their records were com-

11 Stix: Birth Control in a Midwestern City, table 22.

12 The data for all three clinics relate only to those patients who could be found and interviewed between one and five years after their initial contact with the clinic. It may be assumed that those women who failed to maintain contact with the clinics and therefore could not be found were probably not using the contraceptives prescribed for them. For a detailed discussion of the possible bias introduced by the loss of between 15 and 20 per cent of the patients originally in each sample, see references 1, 2 and 3.

pleted. Only 2 per cent of the women in Cincinnati and only 3 of the 991 women in New York did the same. In New York 60 per cent and in Cincinnati 46 per cent of the couples turned to the use of other types of contraception, mainly those with which they were already familiar. Only 20 per cent of the white and

groups of patients studied were typical of the widely differing groups served by physicians and clinics in various sections of the country. The New York group was probably more nearly like the patients of the average urban physician in private practice than like the patients of other clinics. The methods prescribed at the clinic were very satisfactory for some of the patients. The patients who were dissatisfied with the clinic prescription, however, should have been taught the best use of those technics which they preferred. A detailed analysis of their reactions suggested that a more flexible policy, permitting the prescription of a wide selection of generally used technics, would probably have been more satisfactory to the patients.¹³

The patients of the Cincinnati clinic were probably representative of the average urban maternal health clinic clientele. For this group also the clinic should have offered a wider choice of contraceptive technics. The cost of commercial contraceptives may have prevented the use of the more effective methods, such as the condom, by many couples who did not like the diaphragm and jelly. For those couples who were not on relief, the condom ranked high among alternative methods, but couples on relief depended mainly on coitus interruptus or the douche. Had the clinic provided a variety of methods at little or no expense, the service might have been considerably more effective.

The patients of the Spartanburg clinic are typical of women of low economic status in Southern areas of population pressure. The surprising finding for this

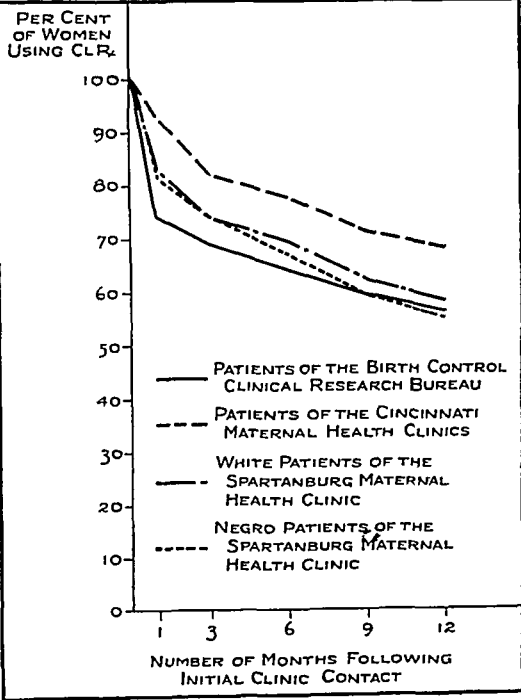


Chart 4.—Proportions of clinic patients using the prescribed contraceptives at successive intervals following their initial clinic contact.

10 per cent of the Negro couples in Spartanburg, who had had much less previous experience with contraception, attempted the use of contraceptives other than those prescribed.

In New York and in Cincinnati the contraceptives most frequently used by couples who decided against using the clinic prescription were coitus interruptus and the condom, in the order named (table 9). In Spartanburg these were also the methods of choice of white couples but in the reverse order. Fifty-six per cent of the Negro women who preferred other contraceptives to those prescribed at the clinic used the douche.

All contraception was more effective after clinic attendance than before for the patients of all three clinics. The percentage of increase in the effectiveness of contraceptive practice after the women had been advised at the clinics is shown in chart 5. For the New York women the postclinic effectiveness of all contraceptives, including those prescribed, was only 18 per cent greater than before clinic attendance, because their preclinic use of contraceptives was so effective that there was little opportunity for improvement. For Cincinnati women the increase was 63 per cent and for Spartanburg white women 72 per cent. For the Negro women, whose preclinic contraceptive practice had little effect on their fertility, the increase was 179 per cent. Even when experience with the prescribed contraceptives was excluded, increases in the effectiveness of other types of contraception ranged from 15 per cent for the New York patients to 96 per cent for the Spartanburg Negroes.

The findings of the studies summarized in this report have important implications for policy, because the four

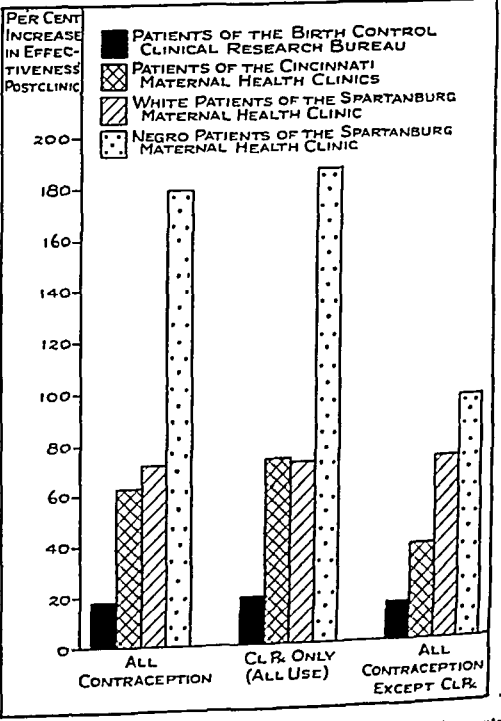


Chart 5.—Percentage of increase in the effectiveness of the contraception used after clinic attendance over that used before clinic attendance, for four groups of women.

group is that so many patients were willing to use a complicated contraceptive technic in spite of inadequate education and poor housing. It is probable that many women who realized the hazard of an additional preg-

13. Dickinson, Robert L., and Morris, Woodbridge, E.: *Techniques of Conception Control*, Baltimore, Williams and Williams Company, 1941, p. 516 and Notestein.¹

nancy made a special effort to prevent the occurrence of such a pregnancy. For the couples without funds, the methods prescribed at the clinic and those which required no expenditure of money were the only ones available.

It is obvious that a contraceptive service for a group such as that attending the Spartanburg Maternal Health

Of the three clinics selected for the present study, the one in Spartanburg is best designed to meet the medical needs of the patient for whom pregnancy would constitute a health hazard. Its interrelationship with the referring services in the hospital permits the best care of the patient from all points of view. An attempt is made to educate the patient who is referred for contraceptive advice to understand the importance of avoiding pregnancy until the referring physician advises her that pregnancy may be safely undertaken. In the repeated pelvic examinations made at the clinic, conditions are frequently found which justify referring the patient for types of medical care other than those for which she is already under supervision.¹⁴ It would seem highly desirable that, with the limited funds available, all subsidized clinics be under hospital or public health supervision in order that the patients in most urgent need of contraceptive advice may be the ones to use such services.

Among the significant and unexpected findings of the present studies has been the discovery that untutored methods of contraception are used quite extensively and with a considerable degree of effectiveness even by those groups who, for one reason or another, are referred for expert contraceptive advice. The effectiveness of contraceptive practice in large groups of people, unselected with respect to overt fertility or a special interest in controlling it, is as yet unknown, but it is certain that vast numbers of people in this country use contraception and probably do so with a fair degree of success.

For medically supervised contraceptive services, as well as for the protection of the mass of the population using commercial contraceptives, it is important that one of the recommendations of the Committee to Study Contraceptive Practices of the American Medical Association

Clinic is one which presents special problems. The ideal service for a group of such low economic and social status should offer a choice of very simple contraceptive requiring as little forethought and care as possible. The so-called "simple" feminine technics usually prescribed are cumbersome, however. For example, the Spartanburg clinician reports that few patients are willing to use the sponge and foam powder because they find it uncomfortable and just as difficult to use as the diaphragm, and they have less confidence in it. The very fact that nearly half of the 90 white couples using other types of contraception after they attended the clinic used condoms (table 9) is probably an indication that this method should have been prescribed more frequently.

If patients are willing to use the diaphragm and jelly or a similar technic, it has definite advantages over male technics in that it puts the control of fertility into the hands of the wife whose health is at stake. If that technic is not acceptable, however, every effort should be made to substitute another and preferable contraceptive which the couple can use effectively. It must be stressed repeatedly that the use of contraception involves many personal problems and adjustments. A method which may be relatively ineffective for some couples may be highly effective for the couple to whom it is acceptable and who use it with care and diligence, whereas even a highly effective method is of little or no use to the couple who dislike it and will not use it consistently. The solution of the problem may be more difficult in a rural Southern area than in a city such as New York, because fewer patients will have used any contraceptives previously and there will be less opportunity to encourage the best use of familiar technics. The wise policy for every physician and clinic, however, is to make sure that every couple is given the contraceptive or contraceptives best suited to individual needs and preferences and to educate each patient to return for further advice if the methods first prescribed are unsatisfactory.

TABLE 9.—Proportion of Couples Among Those Using Contraceptives Other Than Those Prescribed, Who Used Each Contraceptive Method After Clinic Attendance

Type of Contraception Used	White Patients of:			Negro Patients of
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic	Spartanburg Maternal Health Clinic
	Number of Couples Using Any Type of Contraception Except Clinic Prescription or Postclinic Variants			
	584	750	90	39
	Percentage Using Each Type			
Total	100.1	99.9	100.1	100.0
Condom	32.5	21.1	47.8	25.6
Coitus interruptus..	40.1	31.3	21.1	5.1
Condom or coitus in terruptus	13.4	7.7	7.8	2.6
Douche.....	4.3	21.7	15.6	56.4
All other types*..	9.8	15.1	7.8	10.3

* Includes all alternations of methods not otherwise specified, as well as suppository, sponge, jelly, and so on.

ciation be put into effect as soon as possible. In its report to the Association in 1937 the committee recommended "that the American Medical Association undertake the investigation of materials, devices and methods recommended or employed for the prevention of conception, with a view to determining physiologic, chemical and biologic properties and effects, and that the results

14. Stix, Regine K. Gynecological Case Finding in Maternal Health Clinics, Milbank Memorial Fund Quarterly 19:36 (Jan.) 1941.

of such investigations be published for the information of the medical profession."¹⁵

If the American Medical Association would set up standards for contraceptives as it has for drugs and foods, much could be done to improve the quality of commercial contraceptives. Wise pressure on commercial distributors to bring the price of approved products down to a point at which wider distribution would pay for decrease in price would probably make it possible for many people in the poorer sections of the country, where birth rates are highest, to purchase contraceptives not now available to them and would assist in reducing birth rates for that part of the population least able to bear the cost of rearing and educating large families.

Milbank Memorial Fund, 40 Wall Street.

THE COLOSTOMY QUESTION

LOUIS J. HIRSCHMAN, M.D.

DETROIT

One of the greatest boons to the patient suffering from a major obstruction or malignant disease of the colon, particularly the left half of this viscus, is the hope of either permanent cure or prolonged comfort provided by an artificial stoma. Almost every intestinal surgeon and proctologist has studied the problem of providing a satisfactory colostomy, with special reference to some form of bowel control.

Practically every portion of the abdominal wall and the perineum has been utilized for the location of the stoma. The number of different types of colostomies and the ingenuity expended in their formation would make exceedingly interesting and intriguing surgical history. The number of names attached to different types of colostomies resembles a roll call of most of the pioneers in intestinal surgery.

Every surgeon or proctologist operating on a diseased colon has been hopeful of supplying a type of colostomy which would satisfactorily exclude the diseased portion as well as substitute a well functioning artificial anus for the natural aperture. The ideal colostomy should be one formed well above the affected segment of the bowel. Whether this colostomy is to be a temporary or a permanent one will often affect the surgeon's or proctologist's decision as to its location.

When one wishes to divert the fecal stream temporarily, as in the treatment of nonmalignant diseases amenable to resection and anastomosis such as deformities, segmental polyposis or complicated multiple fistula, a double barreled colostomy is of course indicated. A double barreled colostomy may also be advisable as a permanent colostomy in patients suffering from inoperable and irremovable malignant growths and in patients whose general physical condition is precarious and in whom haste is an imperative factor.

The temporary or double barreled colostomy is of necessity an abdominal colostomy. In most instances some portion of the transverse colon is utilized for this purpose. The subsequent closure of a temporary colostomy of the transverse colon is a comparatively simple procedure. One has the advantage of omental utilization for added safety. Not infrequently the descending and also the upper portion of the sigmoid colon has been employed for temporary colostomy, and when there is

sufficient mobilization there is no reasonable objection to it.

In the fulguration of polyps in the upper part of the sigmoid colon a temporary sigmoidal colostomy is of distinct advantage. There is really nothing of a controversial nature about the location of a temporary colostomy.

When it comes to the site of a permanent colostomy, particularly in a patient afflicted with a malignant condition of the anorectal canal, rectosigmoid or the lower part of the sigmoid flexure, there are several factors which must be considered. The first of these is the selection of a section of the colon at least 6 inches above the upper limit of the neoplasm.

Naturally, in the minds of the majority of surgeons the extent of the growth, if not its grade, and the possibility of its complete excision with the least hazard are the prime factors. A patient's life is to be saved or prolonged, obstruction relieved and intestinal function restored to as complete a degree as is compatible with safety in the case at hand.

After the routine study of the patient, and after proctoscopy and sigmoidoscopy have been performed, the roentgenologic examination is of great importance. Fluoroscopic examination, with manipulation of the barium-filled colon, will often decide the type of colostomy to be performed. If the sigmoid flexure is long, redundant and freely movable above the neoplasm, greater latitude in the choice of the colostomy site is afforded the surgeon.

While the presence and extent of hepatic metastasis is an important guide in the prognosis of a patient suffering from a malignant growth in the colon, this should not necessarily influence the location of a permanent colostomy. If the colostomy is to be the best possible substitute for the normal anus and rectum, it should be located at a site in which it can function and be cared for by its possessor with the least amount of discomfort and embarrassment, either physical or mental.

Naturally, when one has been accustomed to normal defecation from a normal perineal anus in the normal sitting position, the news that relief from disease will require a complete change in the mode of intestinal evacuation comes as a psychic shock to even the most phlegmatic and philosophic person.

The great majority of those of us dealing with malignant conditions of the large bowel feel that an abdominal colostomy, with complete eradication of all affected tissue below the colostomy, is, in the present state of our knowledge, the best treatment there is to offer. When such a colostomy is to be performed, there are many arguments by many surgeons as to why various quadrants of the abdomen are utilized as a permanent colostomy site. It seems to me that the mental as well as the physical comfort of the patient should be considered along with the anatomic results to be achieved.

After observation of the discomfort and local irritation which some patients have suffered from a low left inguinal colostomy, the question has arisen Why continue to use this site? Whether one wears a cup, a cap, a dome, a bag or simple gauze pads there is a lack of symmetry to the patient's contour which violates his personal privacy by announcing to the world that there is "something wrong in Denmark." This is more noticeable, of course, in men than in women but is definitely of moment to both sexes.

While speaking of the type of protective covering for a colostomy, through the suggestion of one of my

15. Minutes of the House of Delegates, J. A. M. A. 108:2218 (June 26) 1937.

Read before the Section on Gastro-Enterology and Proctology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

patients, I have adopted a simple procedure. The metal ring and band of the Brick apparatus is utilized. However, instead of employing the now discarded rubber colostomy bag, a simple and inexpensive cover has been suggested.



Fig. 1.—Patient lying on left side. Single barreled umbilical colostomy.

I instruct my patients to purchase from the 5 and 10 cent store some of the waterproof elastic covers used for cups and small bowls to be placed in the refrigerator. These are so inexpensive that they can be discarded after use. The patient is instructed to place a small wad of absorbent cotton over the colostomy to act as a muffler for gas and also to absorb liquid. This device does not occupy as much space as the usual colostomy cap, cup or dome and is certainly less conspicuous under the clothing.

From the standpoint of the strength of the abdominal wall and the presence of a natural opening, well supported by muscular structures, the umbilicus offers many advantages as a colostomy site.

On account of its central location, any portion of the right and median colon ordinarily utilized for colostomy purposes can be brought out through an opening made by excising the umbilicus. Here, it is especially well supported by its adhesion to the thick rectus muscles which closely hug it at this point. Even a temporary colostomy at this site is well out of the way if a second stage abdominoperineal resection is to be performed.

In those rare instances in which, for some reason or other, the colostomy is not placed exactly at the umbilical opening but close to it, the umbilicus itself is always excised. This is done because fecal matter from the colostomy will enter and soil the umbilicus, and the patient's efforts to cleanse this area often result in trauma, erosion and infection.

A curved Pfannenstiel incision allows the skin flap to be raised upward in such a way as to give better

exposure for the resection in the lower part of the abdomen than is usually obtained by the midline or rectus wounds. Any dressings or colostomy apparatus that may be required is so centrally placed that bodily symmetry is preserved.

As the patient sits on the toilet, he holds a crescent basin underneath the colostomy while he injects, with a hand syringe, water necessary to prime the colostomy if and when movements do not occur spontaneously at least daily.

In emaciated patients, this location is a decided advantage over a site in the lower inguinal region because of the fact that a prominent anterior ischial spine not infrequently becomes eroded by irritation from feces or a bandage. The mobility of the sigmoidal segment selected for an inguinal colostomy is sufficient to allow the same portion of the colon to be swung upward to the umbilical site as well as downward in the left lower quadrant.

There is no reason why as much bowel, with as many metastatic glands, cannot be removed with the establishment of an upper midline colostomy as with the inguinal site on the left side. As has been mentioned, the same portion of sigmoid, with good circulation, is used whether swung upward or downward.

There are patients who consult the proctologist for relief when it is not always possible for him to perform the type of operation which may seem to him as ideal as any at his disposal in the present state of our knowledge. I refer particularly to those patients who have such an inordinate prejudice against an abdominal colostomy that they refuse and refute any type of relief which involves the employment of this most valuable procedure.

In many instances one is forced to inform the person that there is nothing else to be offered. In a fairly large group of properly selected cases, however, a perineal colostomy will perform extremely satisfactory service and will be accepted by those patients whose lives would be otherwise sacrificed if they are given no alternative but the performance of an abdominal colostomy.

It is, therefore, interesting to note that there is a gradually increasing number of patients with perineal colostomies who have survived the five year limit without evidence of recurrence. For those persons who otherwise would have succumbed to the ravages of malignant conditions of the colon, several years at

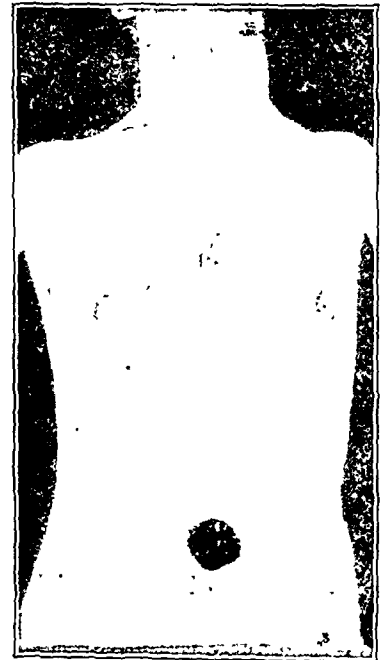


Fig. 2.—Double barreled umbilical colostomy.

least of mental as well as physical comfort have been added to their lives.

With the proper instruction as to the care of the perineal colostomy, and regularity of diet and habit, these persons have been able to continue to pursue their occupations and, in many instances, have not been forced to change their mode of living.

The technic of perineal extirpation, as well as of abdominal extirpation, with the establishment of a perineal anus at the site of the colostomy, has progressed to a point at which it can be stated that practically as much involved glandular tissue can be removed by this method of procedure as by the type of operation known as the Miles technic.

As a matter of fact, one type of perineal extirpation, as suggested by Lynch, disposes of just as much of the rectum and its surrounding fat muscle and glands as does the perineal phase of the Miles operation.

In this type of excision, of course, there is no attempt made to conserve anything in the way of muscles, nerves or coccyx. The pelvic cavity, from the promontory of the sacrum down, is completely cleaned out. In this type of operation the stump of the sigmoid flexure, which would have been utilized in an abdominal colostomy, opens just below the pelvic floor. With a large rubber tube stitched into this stump and the cavity packed with gauze surrounding the tube, it is a perfectly safe procedure. As the wound heals and contracts, the sigmoidal stump gradually prolapses to the cutaneous level and forms the new artificial anus at the normal site.



Fig. 3.—Patient lying on left side. Perineal colostomy with slight mucosal prolapse closing stoma.

In some instances in which the growth is low in the anorectal canal and the sigmoid flexure is quite redundant with a long mesentery, the sigmoidal stump can be brought down to the perineal level and sutured at the time of operation.

In a growth requiring abdominoperineal extirpation, the technic of the abdominal portion of the operation

is the same as for the abdominal phase of the one stage Miles operation. Instead of severing the bowel and turning the sigmoidal stump up through the abdominal wall, the rectum and a portion of the sigmoid flexure, well above the growth, is pushed into the pelvic cavity and the new pelvic floor built from the lateral sheaths



Fig. 4.—Patient lying on left side. Stoma approximately one half size of normal anus.

of the mesentery of the sigmoid, just the same as with the Miles technic.

After closure has been effected, the perineal portion of the operation proceeds in the same manner excepting that the intact rectum and sigmoid flexure is brought down and out into the perineal wound and divided well above the tumor.

If sufficient healthy bowel with good circulation permits, the sigmoidal stump is sutured to the perineal skin; if not, the sigmoid flexure is sutured to the new pelvic peritoneal floor and severed well below it. The rubber tube is then inserted and stitched in place as previously mentioned, and dressings are applied exactly the same as if the entire operation had been performed from below.

While in the operation performed through the perineum it is not possible to ascertain the presence or absence of metastases to the liver, this is not a vital drawback; if metastases are present, nothing surgical can be done about them anyway.

CONCLUSION

In an experience of many years in which practically every type of single and multiple stage operation for the removal of a carcinoma has been performed, and while many types of colostomies have been established, the perineal stoma has retained a definite position in the list of operations at our disposal.

Every surgeon must recall some patients who absolutely refused an operation which included an abdominal colostomy. If those patients had been offered a perineal colostomy, after due explanation, I am convinced from my own experience that a fairly good proportion of those patients who died without operative relief would have had at least a longer life. Certainly they would have had more comfort, both physical and mental. Some reject operation and die because of their inordinate, and often unwarranted, fear of and their repugnance to abdominal colostomy.

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ABSTRACT OF DISCUSSION

DR. NEIL W. SWINTON, Boston: At the clinic our colostomies are routinely made on a level with the umbilicus at a point between the outer and middle thirds of the left rectus muscle. In our experience this type of colostomy has been very satisfactory. This allows a careful closure of the space between the colostomy and the parietal peritoneum on the left and prevents an occasional obstruction of the small bowel. In our early experience, when we did not do this, it resulted in two or three instances of herniation and obstruction of the small bowel. When discussing the question of colostomy, there is a point which one cannot overemphasize. With the completion of the operation for the removal of the disease and the formation of an artificial anus, the surgeon's obligation to that patient is far from finished. The greatest care and attention must be given to the future management of the colostomy and in teaching the patient to regulate his colostomy so that he will be able to return to his normal occupational and social status. We have found that a mildly constipating diet, the careful regulation of bowel function by irrigations every two to three days, which can be taken by the patients themselves, will in the vast majority of these cases return these people to a happy and useful existence.

DR. G. JOHNSON HAMILTON, New York: I am in agreement with Dr. Hirschman's predilection for the perineal stoma. I have been using it for years and believe that it functions at least as satisfactorily as an abdominal one and certainly is better psychologically. In a review of fifty-two Lynch operations I find that complications developed with the stoma in sixteen; in six of these a prolapse of the rectum developed which necessitated a cuff amputation, which was ordinarily performed in the office and without anesthetic. In ten of them a tendency toward constriction developed, five of them sufficiently severe to necessitate a plastic operation in the hospital. In none of them did the fibrosis extend more than 2.5 cm. from the skin edge. All these patients have now developed an individual technic which gives them adequate control and allows them to play their part in society without embarrassment. I have not tried the substitution of a colostomy for the umbilicus but agree with Dr. Hirschman that it seems a very good idea and certainly I will adopt it should I ever again have to make a permanent abdominal colostomy.

DR. CLEMENT L. MARTIN, Chicago: Dr. Hirschman's favorable experience with umbilical colostomy in a large number of cases makes him a rather strong advocate for it. There is a divergence of opinion here: he regards such a colostomy as less conspicuous and easier to care for—other men feel that a lateral colostomy has these advantages. I have been deterred from using it chiefly because of the possibility of obstruction. Midline colostomies are not very satisfactory except as temporary ones; if low there is commonly a mat of intra-abdominal adhesions about the bladder; if high and permanent there is, I think, more danger of obstruction. Three cases of obstruction following umbilical colostomy in the last few months have come to my attention: 1 while the patient was still in the hospital, 1 nine months, the other a little longer after operation. It is unfair to disparage umbilical colostomy on such evidence alone, but the danger of obstruction does compel consideration. As to a perineal stoma: Over a period of years it has been regarded as a poor, unsatisfactory site for a colostomy and it still is and the only excuse for it, as Dr. Hirschman has said, is when the patient refuses anything else. Perineal resection of the rectum without preliminary colostomy or laparotomy, at which time the presence of regional and liver metastases can be determined, is, in my opinion, rarely or never necessary.

DR. DESCUM C. MCKENNEY, Buffalo: I agree with the author, from a limited experience, that in most cases a perineal colostomy functions satisfactorily and, because it is in the location of the normal anus, the care of it is what the possessor has been accustomed to and hence he does not appreciate any very objectionable change. This colostomy is something to offer a patient when, in the rare case, he absolutely refuses an abdominal colostomy and then only if the location of the malig-

nant growth is suitable for the Lynch operation; i. e., it offers as good a chance for complete eradication as by any other method. Dr. Hirschman has long been an advocate of the umbilical colostomy and it has some distinct merits, especially when the transverse colon is utilized. When the mesentery of the pelvic colon is short a carefully plotted colostomy in the left lower quadrant to me is preferable. Utilization of the midline incision for a colostomy, below the umbilicus, shortens operating time and has many of the advantages claimed for the umbilical colostomy. The author is as careful about instructing his patients in the care of their colostomy as he is in the selection of the location for it. If this rule were followed by all surgeons there would be less objection to it. The layman, naturally, dreads the discomfort, leakage, odor, audible escape of gas, difficult care and unsightly appearance. I have my patients use an aluminum cap, which overcomes these objections and in addition offers support which tends to prevent hernia. Most surgeons who are doing many colostomies soon develop a method of their own, often improved by following practical suggestions from the patients themselves. Irrigating the colon daily or every second or third day, taking from thirty to forty-five minutes, often makes it possible for the patient to wear only a pad over the colostomy. Irrigation, however, as ordinarily carried out, is a messy, smelly operation, because there is no sphincter control; however, with an apparatus which supplies an artificial sphincter it is possible to empty the colon completely in a cleanly fashion. Such an apparatus I described and illustrated in a paper on Cancer of the Rectum, Pre-operative Treatment and Palliative Colostomy, read before the American Proctologic Society in May 1932.

DR. THOMAS E. JONES, Cleveland: With regard to the site of the colostomy, it should be put where it fits best. It so happens that, with the type of operation I do, it generally fits best in the midline incision about half way between the symphysis and the umbilicus. Of infinitely greater importance is the indication for colostomy. It is often indiscriminately done. My own feeling is that the obstruction is the only indication. Many will die from metastasis before they become obstructed with a cancer of the rectum, and in this group it is wrong to do a colostomy and bring disrepute to a good surgical procedure. Posterior resection will always have its adherents. A surgeon should do the type of operation with which he is more familiar, provided the factors of operability, mortality and curability compare favorably with other procedures in vogue. My own results are much better with the one stage abdominoperineal procedure.

DR. WILLIAM H. DANIEL, Los Angeles: Dr. Hirschman has presented an important subject and has covered it so thoroughly that I have little to add. He has advocated the umbilicus as the proper site for the permanent stoma and I have used it a few times and found it entirely satisfactory. It has been my custom to establish a permanent colostomy in the midline incision in performing the one stage abdominoperineal resection and in some cases of a permanent double barreled type. Since the care of a colostomy by the patient has become simplified by the use of irrigation and proper diet, cumbersome dressings are not necessary and most persons are able to disguise the location of the colostomy by proper adjustment of the clothing. The perineal stoma is being used by some men whenever possible and by others when the patient refuses the abdominal location. The mental factor is an important one in considering the future welfare of the patient. The abnormal openings which I have seen located in the perineum seemed to function to the satisfaction of the patients who had them.

DR. CLAUDE C. TUCKER, Wichita, Kan.: The colostomy question is a debatable one and will likely always be debatable. The condition calling for a colostomy depends on the choice of location. For a temporary colostomy, diverting the fecal flow, Dr. Hirschman has chosen one way, and the umbilicus is as good as any other unless the patient has a very short mesentery. Then I think it would be wise to choose another location. I

haven't heard Dr. Hirschman express himself on this. I have heard patients state that they would rather die than sacrifice their natural habits, and they did, and I have heard surgeons make the same remark. A colostomy, wherever located, is not so bad if properly taken care of and properly done, but to convince all patients of that is a different thing; therefore I heartily agree with Dr. Hirschman as to establishing a perineal colostomy; thus many lives would be saved which otherwise would be sacrificed. I have found the Lynch type of operation very satisfactory, establishing a perineal anus at the site of the colostomy, as Dr. Hirschman has stated. One can go as high up in the Lynch operation as one does in a Miles operation. Dr. Lynch has gone as far as 71 or 72 cm. and I have gone as high as 57.5 cm. The patient with a perineal colostomy has the urge to go to stool and he can sit on the stool and enjoy the newspaper. Some drive in a hundred miles without soiling themselves, and they are happy patients. In doing a resection we have to think of the natural contour of the body, especially with women, and we are more than justified in doing this type of colostomy.

DR. MONTAGUE S. WOOLF, San Francisco: With all the talk about position of a colostomy and the way people are able to take care of colostomies, a colostomy is a terrible burden to put on a human being. It is certainly worse than an artificial limb; however, what we are after is life, and if we all want to have the longest life compatible with cancer of the rectum we must have first a wide excision of the cancer and then a colostomy. I think the Lynch operation does not get the main glands to the same extent as the abdominoperineal method of Miles. When one makes a perineal resection of this type one is likely to keep close to the bowel, and when one gets up far enough and is close to the bowel one cannot get the aortic glands of the mesentery. In other words the root of the mesentery is the part that must be removed: It is the part of the greatest consequence. The glands next to the colon have become infected through the former and it is no use removing these without having removed the glands infecting them.

DR. LOUIS J. HIRSCHMAN, Detroit: I stated that the best operation for the removal of carcinoma of the rectum and lower colon was a Miles one stage operation, and I tell my patients that. The best criterion of a good operation is one which will remove the entire lesion and all the involved glands so that one can still have a viable stump for the colostomy, whether it is placed high, low or sideways. The same stump of sigmoid which one swings upward for abdominal colostomy, whether an umbilical, lateral or inguinal colostomy, can be swung downward in most cases to the perineum. Before deciding on the type of operation, the surgeon should examine the patient carefully, instrumentally and radiologically. I mean by that that he should go to the x-ray department and should manipulate the barium filled sigmoid under the fluoroscope so as to know how much or how little sigmoid he has at his disposal and will not be embarrassed, after he has told the patient he will do a certain operation, to find he can't do it. This personal manipulation has been of invaluable use in my work, and I always feel that if a surgeon wants to fit his patient to the type of operation he had better stop operating. One must fit the operation to the case in hand. In the period of preparation, which lasts five to seven days, one cleans out the barium and otherwise prepares the patient. I mentioned perineal colostomy definitely to see if I could say a word which would help save the lives of those patients who absolutely refuse abdominal colostomy, and one has always had them. I do say that one can remove just as much tissue, just as many infected glands by an abdominoperineal operation with a perineal stoma in many cases as one can by an abdominoperineal operation with an abdominal stoma, and in a certain percentage of cases one can do a perineal operation of the Lynch type. I want to stress that a patient who would refuse an abdominoperineal operation with an abdominal stoma can be offered the same thing with a perineal stoma in about 7 to 10 per cent of the cases, and those who refuse the abdominal stoma would go off and die without relief otherwise, and one can give those few people the benefit of that type of operation when they refuse the other.

COMPRESSION OF BRACHIAL PLEXUS THE SCALENUS ANTICUS SYNDROME

FREDERICK LEET REICHERT, M.D.
SAN FRANCISCO

This report concerns the relief of symptoms by surgical means in 60 of 74 patients with compression of the brachial plexus (medial cord) due to displacement.

The symptoms of compression of the brachial plexus are the same as those produced by cervical ribs. This condition has been described in the past six years a number of authors. Some have used the term "neuritis of the brachial plexus, mechanical in origin" or "scalenus neurocirculatory compression" to indicate that the chief factor is pressure on the brachial plexus by the anterior scalenus muscle.

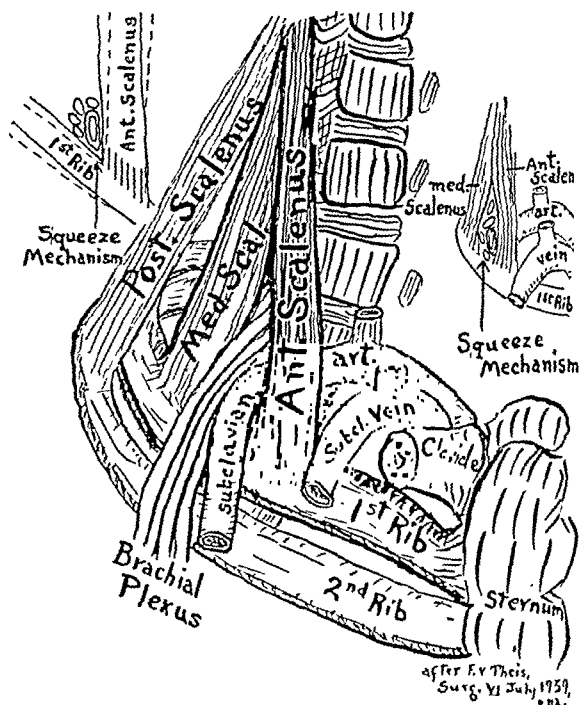


Fig. 1.—Relation of brachial plexus and the subclavian artery to the scalenus anticus and medius muscles and to the first rib. Small insets indicate the squeezing mechanism produced (1) by the two scalenus muscles (upper right) on the upper portion of the brachial plexus and (2) by the acute angle (upper left) produced by the lateral border of the scalenus anticus muscle and the first rib (after Theis¹).

Compression of the brachial plexus by a first dorsal rib was described over thirty years ago by Murphy.¹

Scant attention has been given in the literature to the nonoperative treatment of the symptoms produced by cervical ribs, by abnormal first dorsal ribs or by the squeezing mechanism of the scalenus muscles and the first rib, the so-called scalenus anticus syndrome. Surgical treatment has consisted in resection of the cervical rib, resection of a portion of the first rib and, finally, simple division of the anterior scalenus muscle.²

The condition was popularized by the report in 1935 of Ochsner, Gage and DeBakey,³ whose patients were cured by division of the anterior scalenus muscle.

From the Department of Surgery, Stanford University School of Medicine.

1. Murphy, T.: Brachial Neuritis Caused by Pressure of First P. Australian M. J. 15: 582 (Oct. 20) 1910.
2. Adson, A. W., and Coffey, J. R.: Cervical Ribs: A Method of Anterior Approach for Relief of Symptoms by Division of the Scalenus Anticus. Ann. Surg. 85: 839 (June) 1927.
3. Ochsner, A.; Gage, M., and DeBakey, M.: Scalenus Anticus (Naffziger) Syndrome. Am. J. Surg. 28: 669 (June) 1935.

Theis,⁴ in 1939, found that, since the symptoms were aggravated by faulty posture, conservative treatment was all that was necessary for 17 of 20 patients with suspected compression. He corrected the posture, prevented fatigue and in some instances immobilized the arm and shoulder.

Stopford⁵ in 1919 reported on partial compression of the brachial plexus by a first dorsal rib and expressed the opinion that the essence of nonoperative treatment was to develop the trapezius muscle to such a point that it could support the pectoral girdle and so prevent the lower trunk of the plexus from being compressed by the rib. He advised faradic stimulation, exercises and massage to develop the trapezius muscle.

As early as 1907 Russel⁶ reported that a patient was able to control the pain through elevation of the shoulder, for example by putting the involved hand on the opposite shoulder. The patient was able to sleep when the arm was raised under the head, thus elevating the shoulder.

ETIOLOGY

Compression of the brachial plexus is a brachial neuritis, with or without vasomotor or vascular disturbances in the upper extremity, which appears in certain persons because of an abnormal development of the shoulder girdle (Todd⁷) or of the brachial plexus (Jones⁸), factors that permit friction or pressure on the brachial plexus and the subclavian artery. This friction or pressure, with the resultant irritation of some of the fibers that supply the scalenus muscles produces contractions and spasm of the scalenus anticus and scalenus medius muscles in particular, so that an abnormal elevation of the first rib occurs. This elevation in turn increases the angle between the lateral border of the scalenus anticus muscle and the first rib, squeezing the lower trunks of the brachial plexus and the subclavian artery and also squeezing the plexus between the posterior lateral border of the scalenus anticus muscle and the body of the scalenus medius muscle⁹ (fig. 1). Thus a vicious circle exists which is relieved when the anterior scalenus muscle is sectioned or when corrective posture is maintained day and night to overcome irritation of the plexus and spasm of the scalenus muscles. Trauma to the shoulder region or excessive strain on the shoulder and the supraclavicular region, such as that incurred by hod carriers and soldiers,⁹ may be the exciting cause of symptoms.

SYMPTOMS AND SIGNS

Pain, tingling and numbness occur in practically all cases of compression of the brachial plexus. They may extend from the cervical, scapular or pectoral regions to the hand and fingers. Slight muscular weakness may be found, but atrophy and severe circulatory changes, such as cyanosis, coldness or gangrene of the fingers, are infrequent. The symptoms, therefore, are mainly sensory and sympathetic, with the pain of a dull, gnawing or burning character, and are affected by posture and work. Sleep is disturbed by the pain, and

sedatives give slight relief. The irritation may be limited to the upper portion of the brachial plexus, with pain and paresthesia radiating up the posterior part of the neck and the occipital region and downward over the shoulder to the scapular region. It may involve the pectoral region and the inner side of the arm and forearm, simulating anginal pain.¹⁰ Frequently the pain is limited to the distal half of an upper extremity, affecting the elbow, hand and middle fingers. Paresthesias and sensory disturbances may be bizarre in outline because of the involvement of sympathetic fibers.

DIAGNOSIS

The diagnosis of compression of the brachial plexus is made when local tenderness is found and the symptoms are reproduced by shifting the digital pressure vertically along the scalenus muscle over the width of the brachial plexus.

Pulling or pressing the affected shoulder downward, bending the head and neck to the opposite shoulder, turning the head to look over the affected or the opposite shoulder, pressing the affected arm against the chest with the shoulder depressed and throwing the shoulders and head back are other methods of aggravating the complaints and confirming the diagnosis.

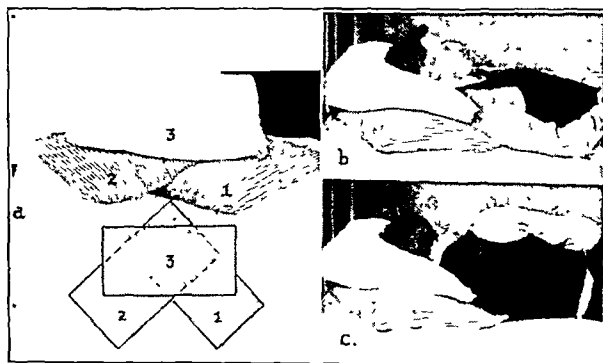


Fig. 2.—Arrangement of three pillows to overcome the squeezing mechanism during sleep. The patient's head rests on pillow 3. When he is lying on his back, the shoulders rest on pillows 1 and 2. With the patient sleeping on one side, the shoulder rests on the mattress between pillows 1 and 2.

During examination relief of symptoms usually follows shrugging of the affected shoulder, shrugging the shoulders and bending the head and neck forward and bending the head and neck to the affected side.

TREATMENT

The accepted and satisfactory surgical treatment for compression of the brachial plexus which has not been relieved by conservative measures is the division of the scalenus anticus muscle close to its insertion onto the first rib. The technic of the operation is that described by Adson and Coffey,² modified by excision of a portion of the muscle as recommended by Ochsner, Gage and DeBakey.³

Section of this muscle was performed in 14 of 74 cases of compression of the brachial plexus prior to March 1941. Ten patients secured complete relief. One died from hemorrhage. In 1, subsequent injections of procaine hydrochloride into the operative area, with massage, finally abolished the remaining symptoms. Two patients were reoperated on, with relief. Both had the plexus freed from scar tissue, possibly from hemorrhage, and 1 also had a dorsal sympathectomy.

10. Reid, W. D.: Pressure on the Brachial Plexus Causing Simulation of Coronary Disease, *J. A. M. A.* **110**:1725 (May 21) 1938.

4. Theis, F. V.: Scalenus Anticus Syndrome and Cervical Ribs, *Surg. G.* **112** (July) 1939.

5. Stopford, J. S. B., and Telford, E. D.: Compression of the Lower Trunk of the Brachial Plexus by a First Dorsal Rib, with a Note on the Surgical Treatment, *Brit. J. Surg.* **7**:168 (Oct.) 1919.

6. Russel, C. K.: Supernumerary Cervical Ribs and Their Effects on the Brachial Plexus and Subclavian Artery, *M. Rec.* **71**:253 (Feb. 16) 1907.

7. Todd, T. W.: The Descent of the Shoulder After Birth, *Anat. Anz.* **12**:257, 1912.

8. Jones, F. W.: The Anatomy of Cervical Ribs, *Proc. Roy. Soc. Med. (Clin. Sect.)* **6**:95, 1912.

9. Nafziger, H. C., and Grant, W. T.: Neuritis of the Brachial Plexus, Mechanical in Origin: The Scalenus Syndrome, *Surg., Gynec. & Obst.* **67**:722 (Dec.) 1938.

Conservative or nonoperative treatment was sufficient to bring relief of symptoms to 60 patients. The non-surgical management consists of variations of the following regimen, depending on the severity of the symptoms: (1) elevation of the shoulder by a sling or by holding the hand across the chest in a fold of the buttoned shirt or coat, (2) elimination of the type of work that aggravated the symptoms and (3) a change in sleeping habits. Since two thirds of the 74 patients complained that their symptoms were worse or at least severe during the night, patients were instructed to sleep on three pillows arranged as illustrated in figure 2. Most patients were accustomed to sleep either without a pillow or with one pillow, a few slept on their abdomens and only 2 had learned that sleeping with the affected arm over the head gave relief.

Experience had shown that relaxation of the scalenus muscles and obliteration of the squeezing mechanism was obtained by using three pillows so arranged that when the patient was lying on the back, the shoulders, head and neck were forced forward. When the patient lay on the side, with the shoulder on the mattress between the two under pillows (fig. 2 A, pillows 1 and 2), and the head on the third or top pillow (pillow 3), there was no sinking of the head toward the under shoulder. If the good shoulder was down, a fourth pillow, under the affected elbow and forearm, would help in keeping the affected shoulder elevated. If the patients were awakened by pain they invariably found either that they had slipped off the pillows or that the pillows had become disarranged. No sedatives were given, since too long an interval would elapse under sedation before the pain produced by the bad position on the pillows or by disarrangement of the pillows would finally awaken the patient. Although sleeping with the arms over the head relaxes the squeezing mechanism, it was found that this position was rarely maintained throughout the night.

COMMENT

Compression of the brachial plexus has been diagnosed in 74 patients. Of these, 42 were women, with the condition present on the right side in 16. Five showed on roentgenograms rudimentary cervical ribs bilaterally, and 3 had such ribs on the right side. Seven women had a scalenotomy, 2 were reoperated on and 1 of the 2 had a dorsal sympathectomy. Of 32 men with compression, 2 had it bilaterally and 10 had the right side involved. Three had rudimentary cervical ribs on both sides, 2 had such ribs on the right and 1 had them on the left side. Six men had scalenotomy, 2 for symptoms that simulated coronary disease. Later 1 of these had an alcoholic block of the thoracic sympathetic nerves for true angina and the patient finally died of coronary thrombosis.

Five patients, 3 men and 2 women, had pains simulating anginal attacks which could be produced by digital pressure over the scalenus anticus muscle, and 3 were relieved by the nonsurgical procedures.

Patients with symptoms of several months' duration were not completely relieved until after two, three or four weeks of conservative treatment.

SUMMARY

Symptoms of compression of the brachial plexus are similar to those of cervical ribs, namely pain, tingling and numbness in the upper extremity, the shoulder and the scapular, cervical and pectoral regions.

They are due to the squeezing mechanism which compresses the brachial plexus between the scalenus

anticus and scalenus medius muscles and the first rib. Spasm of these muscles elevates the first rib and establishes a vicious circle.

Treatment is surgical and nonsurgical.

Of 74 patients, 14 had scalenotomy, 10 achieving relief. The remaining 60 were relieved by conservative measures, consisting of rest and elevation of the shoulder on the affected side during the day and the use at night of three pillows so arranged for sleeping that the squeezing mechanism was overcome.

Clinical Notes, Suggestions and New Instruments

A SAFE METHOD OF APPLYING SOLIDIFIED CARBON DIOXIDE

C. C. CARPENTER, M.D., SUMMIT, N. J.

Unfortunately, the anatomic site of a cutaneous lesion must always be considered with the present methods of therapy with solidified carbon dioxide.

In the treatment of benign or malignant neoplasms of the skin and mucous membranes care must be taken that normal tissue is not frozen. With the older methods of cutting pencils from solid sticks, the very brittleness of the material caused it to chip. These small particles fell on nonpathogenic tissue, sometimes with serious consequences if the site of operation was around the eyes or within the body cavities. With the average duration of treatment of ten to thirty seconds the point on a solid stick is rapidly melted and a zone larger than the lesion is found to have been included in the treatment. Solidified carbon dioxide packed in metal tubes has the disadvantage of transmission of cold through the sides.



Fig 1—Treating angioma of upper eyelid with smallest applicator.

With the apparatus described here the plastic applicators insure complete insulation of the sides without danger to the operator's fingers or adjacent tissue (fig. 1). The amount of snow remaining in the applicator is at all times visible, and the finger tip plunger insures that no more than the required amount is at the tip, so that large surrounding normal areas are not frozen.

Several sized applicators insure the treatment of all such common lesions as verrucae, keratoses, angiomas, lymphangiomas, soft corns and nevi.

DESCRIPTION OF APPARATUS¹

Solidified carbon dioxide is formed by piercing a cartridge of carbon dioxide gas and allowing the gas to flow into a cone shaped expansion chamber (fig. 2). A patented tamping device, using the excess gas as a motivating force, tamps the snow as it is formed into a compact cone. The lower part of the machine may be unscrewed from the upper part, thus enabling the operator to release the cone of snow from its mold.

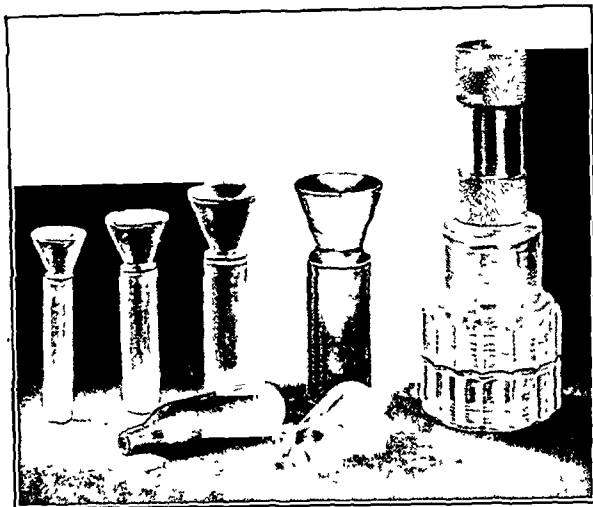


Fig. 2.—Machine for forming solidified carbon dioxide with plastic applicator.

A series of applicators with diameters varying in size from $\frac{5}{32}$ inch to $\frac{3}{4}$ inch is provided. The snow is forced into the applicators at the tip of the sleeve and is compressed into a hard pencil by means of a plunger or rammer. This is specially beveled so that the pencil formed will not drop out of the sleeve but must be pressed out gently. The operator is then able to regulate the speed of renewal of the snow at the active tip and adjust the pressure necessary for refrigeration.

The machine and the applicators are made of a light, strong and durable plastic. The nature of the material is such that it is also completely insulating and assures a 100 per cent efficiency and volume of snow obtained at the tip.

The snow machine, applicators and a box of twenty-four cartridges are contained in a kit $6\frac{1}{2}$ inches square, which may be put in a physician's bag and conveniently carried to any desired point. Refill cartridges in boxes of twenty-four are easily obtained when needed to replace those in the kit.

Summit Medical Group.

ACUTE APPENDICITIS WITH GENERALIZED PERITONITIS

TREATED BY INTRAVENOUS AND DIRECT INTRAPERITONEAL
INJECTION OF A SULFONAMIDE DERIVATIVE

JULIUS GOTTESMAN, M.D., AND HAROLD GOLDBERG, M.D., NEW YORK

The use of sulfonamide derivatives in the treatment of peritonitis of appendical origin was first reported in 1939 by Corry, Brewer and Nicol.¹ Further studies were made by Ravdin, Rhoads and Lockwood² and Michel.³ These authors, administering the drug intravenously, reported striking improvement in the mortality and morbidity of this disease in their series of cases. In 1941 Thompson, Brabson and Walker⁴ suggested

1. Apparatus made by Specialties Manufacturing Company, Inc., Bloomfield, N. J.

From the Surgical Service of Sydenham Hospital.

1. Corry, D. C.; Brewer, A. C., and Nicol, C.: *Brit. M. J.* 2: 561 (Sept. 9) 1939.

2. Ravdin, I. S.; Rhoads, J. E., and Lockwood, J. S.: *Ann. Surg.* 111: 53 (Jan.) 1940.

3. Michel, M. L.: *New Orleans M. & S. J.* 93: 419 (Feb.) 1941.

4. Thompson, J. E.; Brabson, J. A., and Walker, J. M.: *Surg., Gynec. & Obst.* 72: 722 (April) 1941.

that the drug be introduced directly into the abdominal cavity at the time of operation. Rea⁵ concluded that the sulfonamides are most effective when introduced directly into the peritoneal cavity.

REPORT OF CASE

B. P., a Negro child aged $2\frac{1}{2}$ years, was admitted to the surgical service of Sydenham Hospital on July 25, 1941 with a four day history of vomiting, abdominal pains and constipation. Prior to hospitalization the child had been treated with cathartics and enemas.

On the first examination the patient did not appear to be acutely ill. The temperature was 102 F. The general physical examination was negative except for slight voluntary rigidity in both lower quadrants without any definite evidence of peritoneal irritation. The rectal examination was negative. The blood showed slight leukocytosis (13,400 cells). The urine was normal. No definite diagnosis could be established on admission.

During the first two days of hospitalization the temperature ranged between 99 and 102 F. On the fourth day following admission (eighth day of illness) vomiting recurred and the temperature rose to 102.6 F. The following day a sudden change for the worse occurred; the patient became listless and the vomiting fecal and projectile. The abdomen was distended and diffusely rigid and tender. The white cell count rose to 14,200 with 41 per cent band forms. A roentgenogram of the abdomen showed fluid levels of intestinal obstruction. A definite diagnosis of acute appendicitis with generalized peritonitis was now made, and because of the patient's poor condition and the duration of symptoms (nine days) conservative treatment was decided on. Continuous gastric suction through a Levin tube was begun and sodium sulfathiazole, saline and dextrose solution given intravenously.

The following day (tenth day of illness) a diagnostic abdominal puncture was made and a large amount of purulent fluid aspirated (250 cc.). Through the aspirating needle 5 Gm. of sulfapyridine in 100 cc. of distilled water was injected directly into the peritoneal cavity. The aspirated pus on culture was found to contain *Bacillus coli* and hemolytic streptococci. The intraperitoneal dose was repeated two days later. The child also continued to receive sodium sulfathiazole and saline and dextrose solution intravenously and was also given a transfusion of citrated whole blood on two occasions.

Two days after the second intraperitoneal injection a definite improvement in the child's general condition was obvious. The temperature fell to normal and the patient had spontaneous bowel movements. On the eighteenth day of illness the temperature rose again and the abdomen became distended. Examination at this time revealed a pelvic mass which could be palpated rectally. This pelvic abscess ruptured spontaneously through the rectum on the twenty-second day of illness, after which the child made an uneventful recovery and was discharged well.

The child was readmitted to the surgical service on October 15 with all the classic signs of acute appendicitis. A laparotomy was performed and an acutely inflamed appendix removed. The specimen showed evidence of previous rupture. Adhesions were found in the region of the cecum but elsewhere the abdomen was free of all signs of the previous attack of peritonitis.

SUMMARY AND CONCLUSIONS

In the case of acute appendicitis with generalized peritonitis here presented an operation in our opinion was contraindicated. The patient was treated by intravenous administration of sodium sulfathiazole, saline and dextrose solution, by transfusion of citrated whole blood and by the direct intraperitoneal injection of sulfapyridine. The child after the spontaneous evacuation of a pelvic abscess through the rectum recovered and was discharged cured. About two months later the child was readmitted with all the classic signs of acute appendicitis. An acutely inflamed appendix was removed which showed evidence of previous rupture. We are not aware of any reference in the literature to this method of administration.

5. Rea, C. E.: *Surg., Gynec. & Obst.* 73: 193 (Aug.) 1941.

We believe that the direct intraperitoneal method of sulfonamide medication could be of value in the treatment of various types of peritonitis, such as pneumococcic, gonococcic or streptococcic peritonitis, or in cases of postappendical peritonitis in which operation is contraindicated or deferred.

1185 Park Avenue—277 West End Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.
HOWARD A. CARTER, Secretary.

ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

After due consideration of the present status of the use of ultraviolet radiation as a germicide, in consultation with bacteriologists, physicists, chemists, ventilating engineers and other scientists, the Council on Physical Therapy has adopted the following regulations for acceptance of ultraviolet lamps for use as an adjuvant in the disinfection of air.

In this connection it is to be noted that a lamp used for germicidal purposes is a single unit in an installation, and that compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection or the safety of the occupants of the room in which an installation of such lamps is in actual use. Obviously the manufacturer and distributor of such lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air and for the adequacy of the protection from injury of the occupants of the space irradiated. Concerning these questions the Council cannot undertake supervision or assume responsibility for the satisfactory performance of any particular installation.

Obviously in a school room occupied less than eight hours a day by teachers and pupils in apparently good health, the intensity of the ultraviolet irradiation at the level of the desks may be different from that required in a scarlet fever ward requiring continuous operation of the lamps to insure adequate disinfection. In both cases the total amount of direct and scattered ultraviolet radiation incident on the occupants must be kept below the level that will produce conjunctivitis, erythema and any other (at present unforeseen) injurious physiologic effects that may arise from prolonged irradiation. This requirement should be met by a suitable arrangement of the lamp fixtures and light baffles and not by requiring the pupil to wear glasses and a special covering of the parts of the body (face, hands) normally uncovered.

In this connection it is to be noted that the efficiency of the emission line 2,537A (angstroms) in producing an erythema is very high and, in contrast, the efficiency of this emission line in producing tan is very low. As a result of this slow acting protective mechanism (tanning skin pigmentation) the irradiated occupant of the room may suffer severe burns. The data governing the Council's Acceptance of Sun Lamps show that an intensity of 36 microwatts per square centimeter can produce an erythema in fifteen minutes. If the reciprocity law holds for very low intensities and long exposures, then the total intensity of the ultraviolet radiation (diffusely reflected from the walls and fixtures and emanating directly from the lamp) incident on the occupant for seven hours or less should not exceed five-tenths microwatt per square centimeter ($0.5\mu\text{W}/\text{cm}^2$) and for continuous exposure (twenty-four hours a day) should not exceed 0.1 microwatt per square centimeter of wavelength 2,537A. How to design the lamp installation to meet the requirements for adequate disinfection of a room and at the same time protect the occupants is a problem for solution by the sanitary engineer.

At the present juncture the design and installation of ultraviolet lamps in their fixtures for disinfecting purposes is empiri-

cal and the adequacy of disinfection by any given installation of lamps must be judged by clinical experience. For example, clinical evidence has been submitted to the Council showing that, in a scarlet fever ward (size about 60 by 27 by 11 feet) containing sixteen cubicles, four lamp units, each one emitting a radiant flux of 30 microwatts per square centimeter at 1 meter, were found inadequate; but eight lamp units in the ward, each unit protecting two cubicles, and a ninth unit at the entrance, prevented cross infection. This is a rather high intensity (requiring twenty minutes calculated time to produce a minimum perceptible erythema) incident on a person of average height, standing directly under a lamp fixture suspended from a ceiling of average height. A greater number of lamps, each one of lower ultraviolet intensity (say 20 microwatts per square centimeter at 1 meter) and lower power input, more evenly distributed throughout the room should be safer and equally efficient in disinfecting the air. This is a matter of engineering design, beyond the scope of the Council's purview.

PHYSICAL DATA ON GERMICIDAL LAMPS

Experimentally, applying equal amounts of energy of different wavelengths, it is found that the spectral band at 2,652A appears to produce the maximum bactericidal action and that the emission band at 2,537A is only about 70 per cent as effective. This difference in effectiveness is negligible in the present considerations because in readily obtainable sources of germicidal radiation, especially in the low vapor pressure (cold cathode) mercury discharge tube, which is well adapted for killing microorganisms, the ultraviolet radiant power of wavelength 2,652A is less than 0.2 per cent of that of wavelength 2,537A, the resonance emission band that dominates the whole ultraviolet spectrum of this type of lamp.

About 90 per cent or more of the total biologically effective ultraviolet radiation of wavelengths shorter than 3,132A emitted by the low pressure mercury discharge (whether in quartz or in a transparent glass tube) is concentrated in the emission line at 2,537A. For this reason the emission line at 2,537A, logically and by common consent, is taken as the standard of homogeneous ultraviolet radiation for evaluating the ultraviolet output of germicidal lamps, just as the wavelength 2,967A in the high vapor pressure (hot cathode) mercury arc is taken as the standard of homogeneous ultraviolet erythemogenic and antirachitic radiation in evaluating the ultraviolet output of therapeutic lamps.

The low pressure mercury discharge in a suitable glass tube or in a suitably filter jacketed quartz tube which readily transmits the strong, highly germicidal emission line at 2,537A but is opaque to wavelengths shorter than about 2,200A (that generate ozone) appears suitable to supplement other means of disinfection when operated under controlled conditions and limited to certain types of applications.

From the evidence available it appears that a minimum of 5,000 to 10,000 microwatt seconds per square centimeter ($\mu\text{W sec./cm}^2$ or 50,000 to 100,000 ergs/cm.²) of homogeneous radiation of wavelength 2,537A is required to produce adequate (practically 100 per cent) killing of microorganisms, especially bacteria. With an exposure of fifty to one hundred seconds this will require an intensity of 100 microwatts per square centimeter.

The Council has adopted 100 microwatts per square centimeter of homogeneous radiation of wavelength 2,537 angstroms as the unit of germicidal intensity (G. U.); that is, $1 \text{ G. U.} = 100\mu\text{W}/\text{cm}^2$ of radiation of wavelength 2,537A.

Since the ultraviolet emission from the low vapor pressure mercury discharge tube is practically homogeneous radiation of wavelength 2,537A, such a lamp can be readily calibrated in absolute value and used as a standard. The intensity at 1 meter may be only one fifth of the Council's unit, or 20 microwatts per square centimeter, for safety to the occupants. This will require a minimum exposure of two hundred and fifty to five hundred seconds for adequate disinfection, which will depend on the rate of circulation and average distance of the air in front of the lamp. Evidence has been submitted to the Council

showing that cross infection in a contagious ward may be prevented by using a sufficient number of lamp units, each unit having an intensity of 30 microwatts per square centimeter at a distance of 1 meter from the burner. This will require an exposure of one hundred and sixty-seven to three hundred and thirty-four seconds for adequate disinfection, which implies a slow movement of the air in front of the lamp installation.

SCOPE OF THE COUNCIL'S ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

The Council has given careful consideration to the feeling, expressed by manufacturers vitally concerned in the matter, that the general acceptance of the use of ultraviolet radiation as a sanitary agent may necessitate some form of regulation, and that ultraviolet generating units offered to the public and medical profession may be classed with antiseptic agents requiring a degree of control of their potency and keeping qualities.

Under this caption is given an analysis of various proposed applications of ultraviolet radiation as a disinfectant and a statement of the specific applications that appear to fall within the Council's purview.

The advantages and disadvantages of the use of germicidal ultraviolet radiation for sterilizing purposes are summarized in the recent (1941) issue of "The Chemical Action of Ultraviolet Rays," by Ellis and Wells, second edition, by Francis F. Heyroth (see p. 718, "The Sterilization of Water"). L. R. Koller (*J. Applied Physics* 10:629, 1939) found that while sterilization of glassware and dishes is possible by means of ultraviolet radiation it was very important to start with fairly clean surfaces. Practically the same results are reported in a recent investigation by J. W. Appling and F. W. Tanner on the "Bactericidal Effect of Ultraviolet Rays on Micro-Organisms on Restaurant Glassware" (*Proc. Soc. Exper. Biol. & Med.* 47:51, 1941). While they noted decided improvement on irradiation, complete sterilization did not result in every case. In this connection reference is made to an editorial on "Disinfection by Light" (*Brit. M. J.* 2:707 [Nov. 23] 1940) showing that much remains to be done in studying the capacity of such lamps to reduce the dangerous bacterial content of air, not only under controlled laboratory conditions, but also in the more difficult and varied circumstances of practical use.

In this connection it is important to note that in order to kill a micro-organism a direct hit by ultraviolet rays of sufficient intensity is required. This is difficult to accomplish on the edge of a drinking cup, also in a liquid containing suspended matter or in air laden with dust particles that shield the organism. As an effective germicide a product must effect practically 100 per cent killing. Ultraviolet germicidal rays cannot penetrate deeply and hence may be absorbed by finger marks or other contamination on a drinking cup. The ultraviolet germicidal lamp, therefore, appears to be an uncertain means of sterilizing solid objects (drinking cups, combs, brushes, shaving utensils, shoes, toilet seats) even if irradiation of the whole surface is possible.

At this time satisfactory evidence is not available to warrant acceptance of ultraviolet lamps by the Council for disinfecting solids. Furthermore, the Council is not fully convinced at the present time that it should assume the responsibility in this matter. The whole subject is too new, too complex and apparently too uncertain where virulent organisms (e. g., typhoid) may be concerned in spreading epidemics.

Some evidence seems to indicate that the ultraviolet germicidal lamp can be used for sterilizing water, beverages and the like but only after adequate removal of suspended material; and it is applicable only to liquids which are highly transparent to ultraviolet germicidal radiation.

In a few cases in which chemical methods of sterilization of water may be harmful, as for example for surgical purposes (mentioned by Ellis and Wells), under certain conditions irradiation with ultraviolet lamps is reported to be useful. This acceptance is not concerned with such applications, which do not appear to be very wide. Moreover, it is not clear wherein

sterilization by ultraviolet rays is superior to boiling or distillation of the water used.

The use of ultraviolet radiation for disinfecting air in industrial plants, barracks, school rooms, assembly halls, refrigerators and so on also appears to be outside the Council's purview. In fact, at this juncture the whole question of the use of ultraviolet radiation for disinfecting purposes is too complex and too little understood for the Council to do more than attempt to keep the medical profession informed regarding particular ultraviolet lamps that are acceptable for use in this method of disinfecting air in hospitals, nurseries and operating rooms (relatively free from dust) as practiced by present day empirical methods.

TENTATIVE REQUIREMENTS FOR ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING AIR

Clinical evidence submitted to the Council shows that under properly controlled conditions killing of air borne micro-organisms by ultraviolet rays may be used to supplement other methods of disinfecting air for prevention of cross infection in contagious wards in nurseries and hospitals, and for reducing air borne infection of wounds in operating rooms.

In considering ultraviolet generators for disinfecting purposes the Council makes no distinction between lamps for use in air conditioning ducts and lamps for use in open rooms in which there is only a slow circulation of air. In both cases a sufficient number of lamps must be provided to insure adequate disinfection of the air as determined by approved culture tests or other accepted procedures.

To comply with the Council's requirements the ultraviolet spectral energy distribution of the germicidal lamp shall be comparable in lethal effectiveness with the low vapor pressure mercury discharge tube, in which the dominant radiation is of wavelength 2,537A.

The minimum intensity at right angles to and at a distance of 1 meter from the plane of the lamp tube in its fixture shall not be less than the germicidal equivalent of 20 microwatts per square centimeter of homogeneous radiation of wavelength 2,537A. The useful life of the lamp shall not be less than four thousand hours. During this period the ultraviolet output shall not fall below the herein specified minimum intensity. To meet this requirement the lamp may be provided with a voltage regulator to compensate for the decrease in intensity of ultraviolet with usage; or the lamp may emit a sufficient excess of ultraviolet radiation when new, so that the output shall not fall below the specified minimum value ($20\mu\text{W}/\text{cm}^2$ at 1 m.) in less than four thousand hours' operation. In either case the installation shall be provided with adequate safeguards against overexposure of the occupants of the room to ultraviolet radiation. The burner of the lamp shall be of glass or of suitably filter jacketed quartz, highly transparent to the emission line at 2,537A, and opaque to radiation of wavelengths shorter than 2,200A, to prevent the generation of the injurious amount of ozone, largely produced by these short wavelengths. To insure compliance with these requirements the lamp may consist of one, two or three tubes, mounted and operated as a unit.

For consideration of acceptance by the Council, the manufacturer shall submit a lamp unit in its fixture, permanently marked as to its useful life, and its radiant flux in microwatts per square centimeter of wavelength 2,537A, at 1 meter under the normal power input used to insure a useful life of four thousand hours or more. In addition the manufacturer shall submit satisfactory clinical evidence, obtained over a period of not less than four winter months, of the effectiveness of an installation of such lamps in maintaining sterilized conditions in the space (hospital, nursery) subjected to radiant disinfection. For statistical purposes in improving installations, included in this evidence (for the present at least) is to be a statement of (1) the size of the room and the average number of occupants (and their ailments), (2) the number and arrangement of the lamp units, (3) kind and amount of ventilation and (4) the procedure to determine and maintain the intensity above the minimum level during the useful life of the lamp.

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SATURDAY, JANUARY 24, 1942

PROCUREMENT AND ASSIGNMENT SERVICE MAKES RECOMMENDATIONS TO ALL PHYSICIANS

Under the heading Medical Preparedness in this issue of THE JOURNAL is an official statement from the board of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians. Here are recommendations to all physicians with reference to the places they may occupy in the national emergency. There are directions addressed specifically to (1) medical students, (2) recent graduates, (3) interns who have completed twelve months in a hospital, (4) members of staffs of hospitals, (5) all physicians under 45 years of age and (6) all physicians over 45 years of age.

These recommendations, it will be observed, do not state specifically that any group, either medical students, interns or physicians, will be deferred by draft boards. Congress did not provide for blanket deferment of any group. However, authorities in the Selective Service have indicated their desire to cooperate with the Procurement and Assignment Service; any bona fide medical student in good standing or any physician called by the draft board may file an appeal.

The offices of the surgeon generals of the Army and of the Navy have arranged to permit junior and senior students who have enrolled in the medical administrative corps in the Army or who have obtained ensign commissions in the United States Naval Reserve to complete their medical education. Obviously the Procurement and Assignment Service must depend on the assurances of the Selective Service System and of the Army and Navy for proper action in these matters.

Apparently some physicians, perhaps even many, have been confused by the publication of the enrolment blank which appeared in previous issues of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and in the state journals and by subsequent changes in procedure. Let us bear in mind that conditions change from week to week, almost from day to day. A procedure is initiated to obtain a certain effect and to supply a certain need. When the effect is obtained and the need is satisfied, that procedure becomes obsolete. The blanks which were published in THE JOURNAL served to bring in enough applications to meet the immediate needs of the Army and Navy Medical Corps. Every one of the men under 36 years of age who filled out that blank has been considered to be a volunteer available for immediate service. Nevertheless, all names are being checked with the roster at the headquarters office of the American Medical Association. Those who are especially qualified in certain specialties are being given special consideration for the kind of work for which they are particularly fitted.

Apparently a number of physicians, even some of advanced age, felt that in filling out these blanks they were making themselves available for immediate service with the Army or Navy or in some civilian capacity. Some are resentful that they have not been called; others are fearful that they may be called. Hence it is recommended that every physician, whether or not he has filled out any enrolment blank previously, should read most carefully the announcements which appear in this issue and which are specifically directed to physicians of definite age groups. Within the near future an enrolment blank will again be sent to every physician in the United States under the auspices of the Procurement and Assignment Service. This will give opportunity for every physician in the United States to enroll himself with that service as ready to serve a specific need for which he is fitted. The Procurement and Assignment Service proposes also to make available to every physician who does enroll a certificate and a numbered button which will indicate to every one that he is a man who has offered to do his utmost for our government in its time of emergency.

Also under preparation is a statement consisting of questions and answers which have come from many physicians in many parts of the country. This statement will be published in THE JOURNAL just as soon as it is available, and reprints will be made available for those who wish to secure them.

SYNERGIC TOXINS OF DIPHTHERIA
GRAVIS

Striking indeed is the contrast between the optimism that prevailed during the first three decades of the twentieth century with regard to the successful serologic mastery of diphtheria and the pessimism and perplexity that characterize the present decade. The first indication of this growing pessimism dates from 1927, when Deicher and Agulnik¹ recorded a steady rise in diphtheria mortality in the Virchow Krankenhaus, Berlin, the 5 per cent mortality of 1924 having increased to 26.7 per cent. Within two years similar epidemics of clinically refractory cases were reported from Czechoslovakia, France, Italy and Rumania, with later spread to the British Isles.²

The newly recognized malignant diphtheria is characterized by hypertoxicity. There is relatively little membrane formation in the throat but severe local edema and necrosis, "bullneck," albuminuria, subcutaneous and submucous hemorrhages, and neurologic complications. The bullneck is due to massive cellulitis, with only minor enlargements of the cervical lymph nodes. Among the necropsy appearances are renal, cardiac, adrenal and neurologic degenerations, with occasional focal necroses in the spleen. Therapeutically the hypertoxic cases are almost totally refractory to diphtheria antitoxin, twenty to one hundred times the usual therapeutic dose having been injected intravenously without demonstrable curative effects. Moreover, diphtheria gravis is apparently not prevented by artificial immunization with any of the prophylactic agents in current use.

Following recognition of this refractory type of diphtheria a voluminous European literature was developed, but without a definite lead to research till the disease reached its peak in the British Isles. In the course of routine laboratory examinations, Anderson and his colleagues³ of the University of Leeds then gained the impression that a new and relatively stable type of the diphtheria bacillus was involved. The culture medium giving the sharpest differentiation is heated blood agar ("chocolate") containing 0.04 per cent of potassium tellurite. It is essential that the meat extract used in the preparation of this tellurite chocolate medium should not be heated above 75 C. but sterilized by filtration.

The characteristic diphtheria gravis or "Michaelma's daisy" colony on this medium is dark gray or gray black with distinctive petal-like radiations about a deeply stained center. No other bacterium thus far studied by Anderson and his co-workers produces a colony at all closely resembling this. For all strains of the diphtheria bacillus exhibiting this colony structure, Anderson suggests the name *B. diphtheriae gravis*, with

B. diphtheriae mitis reserved for the conventional diphtheria colony. Under this nomenclature the Park-Williams strain 8 would be classified as *B. diphtheriae intermedius*, the strain being half way between *mitis* and *gravis*.

Clinical applications of this new classification were afterward made by the Zinnemanns,⁴ who examined 1,300 clinical cases during the 1936 Ukrainian epidemic. They found that 96 per cent of all cultures recovered during life from all fatal cases in this epidemic were of the *gravis* type. The usual commercial diphtheria antitoxin would protect guinea pigs equally well against this toxin, and a special antitoxin prepared by immunizing animals against *gravis* filtrates was not found superior to the ordinary commercial product.

From these results it became evident that there is something radically wrong in conventional theory or technic. One conceivable error arises from the routine method of producing diphtheria toxin. In this technic the organism is grown for a long time in a fluid medium in such a way as to favor oxidation for the production of growth energy. In the infected throat, in contrast, the bacillus is grown on a solid medium and presumably uses tissue carbohydrates as its source of energy. To imitate the natural method of toxin production, O'Meara⁵ grew *gravis* strains for forty-eight hours on Loeffler's blood serum. The micro-organisms were then suspended in saline solution and allowed to stand about twenty-four hours. The resulting saline extract (or autolysate) was then freed from organisms by centrifugation followed by Berkefeld filtration.

Inoculated subcutaneously in 1 to 2 cc. doses, such extracts never cause more than a slight local temporary edema in guinea pigs. In 5 cc. doses, however, the extracts occasionally cause death, with the usual post-mortem appearances of death from diphtheria toxin. When the *gravis* extract is inoculated in 0.2 cc. doses intracutaneously, however, it is found to have distinctive properties. This is shown by immediate wheal production, usually reaching about an inch in diameter by the end of thirty minutes. Within two hours a red flush originating at the center has usually spread outward to cover the entire swelling.

If the saline extract is centrifuged but not filtered, so as to contain a certain amount of bacterial detritus, an even more pronounced intradermal reaction is noted. Within two or three days a central area of necrosis half an inch in diameter may be formed. In control tests with *mitis* or *intermedius* strains, little or no immediate cutaneous reaction is noted and the inclusion of unfiltered detritus does not enhance the intracutaneous toxicity. From this and other evidence O'Meara concludes that *gravis* strains grown on a solid medium form little or no routine diphtheria toxin but do form a product having properties analogous to those of the

1. Deicher, H., and Agulnik, F.: Deutsche med. Wchnschr. 53: 825 (May 13) 1927.

2. McLeod, J. W.; Orr, J. W., and Woodcock, H. E. de C.: J. Path. & Bact. 48: 99 (Jan.) 1939.

3. Anderson, J. S.; Haggard, F. C.; McLeod, J. W., and Thomson, J. G.: J. Path. & Bact. 34: 667 (Sept.) 1931.

4. Zinnemann, K., and Zinnemann, I.: J. Path. & Bact. 48: 155 (Jan.) 1939.

5. O'Meara, R. A.: J. Path. & Bact. 51: 317 (Nov.) 1940.

Duran-Reynals⁶ "spreading factor" formed from invasive strains of staphylococcus or streptococcus.

The O'Meara synergic theory, however, was deduced from subcutaneous tests in which gravis extract was added to routine diphtheria toxin. Injected subcutaneously at the central part of the guinea pig abdomen, the mixture causes an enormous edematous swelling, often extending from the neck to the pubis. A large necrotic slough eventually forms. When the dose is sufficiently large to cause death, the time of death is determined by the routine toxin dose and is in no way related to the amount of gravis extract. Necropsy appearances usually include edema of the lungs, pleural effusion and pale adrenal glands, with an occasional hemorrhage in the spleen.

From such evidence O'Meara concludes that neither the routine diphtheria toxin nor the saline extract alone is able to produce the classic picture of diphtheria gravis but that the two products acting together are able to do so. He refers to these two synergic toxins as substance A and substance B. Toxin A is presumably identical with the routine mitis exotoxin, while B occurs in highest concentration as gravis endotoxin. These two substances acting together constitute fully potentiated diphtheria toxin. Two antibodies, anti A and anti B, are presumably necessary to overcome this synergic effect.

O'Meara finds this theory a logical explanation for the curious anomalies in toxin-antitoxin titration, such as the "Ehrlich phenomenon," the "Danysz phenomenon" and other nonagreements with the laws of multiple proportion. Proof that B. diphtheriae mitis produces a toxin consisting almost solely in A substance offers a logical explanation for the therapeutic efficiency of diphtheria antitoxin in the treatment of milder clinical cases. According to O'Meara's experimental data commercial antisera consist almost exclusively of anti A toxin, the anti B component conceivably being lost during the process of manufacture. Proof that B. diphtheriae gravis forms a superabundance of B toxin, which acts as a vector for a Duran-Reynals spreading factor, offers a logical explanation from the clinical failure of routine antitoxin serum in the treatment of malignant cases. Broader implications of O'Meara's theory arise from the fact that failures to obey the law of multiple proportions are not restricted to diphtheria toxin-antitoxin reactions but have also been described for other bacterial toxins.

According to a war censor release,⁷ diphtheria gravis was introduced into Halifax, Nova Scotia, recently but has been checked and its local recurrence made unlikely by vigorous cooperation between the local health authorities and an expedition of eleven experts sent from the Harvard Medical School. Sulfadiazine plus routine antiserum were used in fighting this epidemic. Sulfadiazine was administered to all carriers.

VITAMINS FOR GRAY HAIR

"My hair is gray but not with years, nor turned it white in a single night." Thus spoke the poet. The phenomenon of sudden or rapid graying of the hair under the stress of fear, anxiety or other deeply disturbing nervous effects is well known. The gradual graying of the hair is also interesting. Many a worker finds difficulty in securing employment because of premature grayness of the hair. The whole process has been a mystery to medical science for many years.

An interesting account by Aleš Hrdlička in his book "The Old Americans" discusses the case of Major A. W. Greely, arctic explorer, who in 1884, toward the end of an exceedingly difficult trip of arctic exploration, had his hair turn completely white. On his return to civilization the whiteness began to disappear gradually and to return to a nearly normal condition. Writing in 1922, General Greely said "When rescued at Cape Sabine in 1884 my hair was entirely white, due probably to the continuous condition of semistarvation from which I suffered for over nine months. Within a year my hair darkened considerably, though it never returned entirely to its original coloring."

This item, written more than fifteen years ago, is strangely apropos in these days when attention is being turned more and more to the relationship of the diet to the graying of hair.

Recent reports in newspapers and magazines assert that the color of the hair can be restored by the administration of vitamins. Most of these reports have centered around the supposed virtues of para-aminobenzoic acid, said to be especially effective in restoring color to the gray hair of persons whose hair has been red. Para-aminobenzoic acid has been isolated from yeast, definitely identified, and is considered to be the substance in yeast extracts which reverses the bacteriostatic effect of sulfanilamide. In the laboratory it has been shown to be a bacterial growth factor. Ansbacher has claimed that it is a growth promoting factor for the chick and a factor which is curative of gray hair which develops in black rats when maintained on certain types of synthetic diets. Sieve¹ has fed doses of 100 mg. twice daily to adults and has reported that after about two months there was darkening of the hair in all instances. Confirmatory reports by qualified investigators have not yet appeared. Because of the publicity that has been given to the work, many patients have been led to request treatment by their physicians.

A diversity of opinion still prevails about the relation between diet and graying of hair in animals. Most investigators have been unable to verify Ansbacher's observation that para-aminobenzoic acid is related in any way with the phenomenon of graying of hair in animals. The recent report of Unna, Richards and

6. Duran-Reynals, Francesc: J. Exper. Med. 58: 161 (Aug.) 1933.
7. Science Supplement 92: 9 (March 28) 1941.

1. Sieve, B. F.: Science 91: 257 (Sept. 12) 1941.

Sampson² of the Merck Institute states that black rats which are fed a synthetic diet deficient in pantothenic acid become gray in about four to six weeks. Pantothenic acid at a level of 100 micrograms a day will prevent or cure this condition. Para-aminobenzoic acid in these experiments was entirely ineffective.

Elvehjem and his collaborators³ substantiated this work in its entirety. Williams⁴ found that pantothenic acid was without effect on the graying of hair. György and Poling⁵ believe that both pantothenic acid and biotin, another less well known member of the vitamin B complex, are necessary to prevent or cure nutritional achromachia—loss of hair color—in animals. Their lack of success has been attributed to the fact that the supplementary feeding of pantothenic acid used was too small.

Over ten years ago it was observed by a number of biochemists interested in nutritional anemia that black haired rats became gray on a milk diet. When the anemia was developed on this diet it was cured by administration of iron and copper and the color of the hair likewise was restored to normal. Agnes Fay Morgan⁶ and others showed in 1938 that a similar condition of gray hair could be produced in animals by a diet that did not contain all factors of the vitamin B complex. Thus came the conviction that vitamins may be concerned with this phenomenon. Even yet the experimental evidence is conflicting.

Is para-aminobenzoic acid really concerned with the maintenance of normal dark hair color in man? If gray hair is darkened by administration of relatively large amounts of this substance, the effect may be due simply to the excretion into the hair of some paraphenylenediamine-like compound which acts like a dye. Not all people whose hair has turned gray are necessarily suffering from a demonstrable vitamin deficiency. Before further experimental work is done on human beings it would be well to exhaust the possibilities of animal experimentation to ascertain the metabolic function of these substances that are present in yeast. Further, in view of the paucity of information about the functions of para-aminobenzoic acid, it would be highly desirable to know something about the metabolic history of this chemical in the body before relatively large doses are administered to patients over comparatively long periods of time. Finally, the evidence in behalf of some definite relationship between intake of vitamins and graying of hair is far more convincing for pantothenic acid than for para-aminobenzoic acid.

2. Unna, K.; Richards, G. V., and Sampson, W. L.: Studies on Nutritional Achromotrichia in Rats, *J. Nutrition* 22: 553-563 (Dec.) 1941.

3. Henderson, L. M.; McIntire, J. M.; Waisman, H. A., and Elvehjem, C. A.: Pantothenic Acid in the Nutrition of the Rat, *J. Nutrition* 23: 47-58 (Jan.) 1942.

4. Williams, R. R.: Inefficacy of Pantothenic Acid Against the Graying of Fur, *Science* 92: 561-562 (Dec. 13) 1940.

5. György, Paul, and Poling, C. E.: Further Experiments on Nutritional Achromotrichia in Rat and Mice, *Proc. Soc. Exper. Biol. & Med.* 45: 773-776 (Dec.) 1940.

6. Morgan, Agnes F.; Cook, B. B., and Dawson, H. G.: Vitamin B₂ Deficiencies as Affected by Dietary Carbohydrate, *J. Nutrition*, 15: 27-43 (Jan.) 1938.

Current Comment

FACILITIES FOR SELECTIVE SERVICE REGISTRATION AT ANNUAL CON- GRESS ON MEDICAL EDUCA- TION AND LICENSURE

Elsewhere in this issue appears the program of the Congress on Medical Education and Licensure to be held February 16-17 in Chicago. Special emphasis is placed in this year's program on medical preparedness as it affects the training of physicians. The acceleration of the medical curriculum will be a major topic of discussion. Physicians or others living outside of Chicago who attend and who are required to register under the Selective Service regulations on February 16 can do so between 7 a. m. and 9 p. m. at the congress in the Palmer House. All citizens between the ages of 20 and 44 inclusive who were not registered on Oct. 16, 1940 or on July 1, 1941 are required to register.

THERAPEUTIC RESEARCH CORPORATION OF GREAT BRITAIN LIMITED

The formation of the Therapeutic Research Corporation of Great Britain Limited has been announced by five leading British pharmaceutical manufacturers. The principal objects of the T. R. C., as it is to be known, are:

To provide for the coordination and extension of research in matters of common interest with a view to accelerating the discovery of new substances for the service of therapeutic and preventive medicine, to ensure proper collaboration with medical, dental and veterinary practitioners in the introduction of new medicinal substances and to assist in the advancement of the art of medicine by the subsidization of research on a broader and more rational basis than has so far been possible in the British pharmaceutical industry.

To provide for the pooling of manufacturing facilities, where desirable.

To enable the industry to cooperate more effectively in national planning by presenting to the government through its appropriate medical, dental, veterinary, scientific and technical organizations the pooled knowledge and facilities acquired by the constituent companies in the field of therapeutic research.

Products evolved as a result of research sponsored by the corporation will be marketed and sold by the constituent companies under a common name. The T. R. C. will assist wherever practicable in simplifying the nomenclature of new medicinal substances. The announcement is significant, since it points the way to a desirable trend in drug research and marketing. Apparently the pooling of research interests involved in the formation of the organization is not intended to be merely a wartime expedient. While a similar idea had been frequently advocated in this country,¹ the first step in this direction has been taken in Great Britain. The functioning of the T. R. C. and its influence on drug research will no doubt influence greatly the attitudes of both the medical profession and the drug manufacturers of America.

1. Klumpp, T. G.: The Metamorphosis of Drug Research, *Science* 61: 60 (Jan. 13) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

RECOMMENDATIONS TO ALL PHYSICIANS WITH REFERENCE TO THE NATIONAL EMERGENCY

All inquiries concerning the Procurement and Assignment Service should be sent to the Executive Officer, 5654 Social Security Building, Fourth and Independence avenues S.W., Washington, D. C., and not to individual members of the Directing Board or of committees thereof.

I. MEDICAL STUDENTS

A. All students holding letters of acceptance from deans for admission to medical colleges and freshmen and sophomores of good academic standing in medical colleges should present letters or have letters presented for them by their deans to their local boards of the Selective Service System. This step is necessary in order to be considered for deferment in class II-A as a medical student. If local boards classify such students in class I-A, they should immediately notify their deans and if necessary exercise their rights of appeal to the board of appeals. If, after exhausting such rights of appeal, further consideration is necessary, request for further appeal may be made to the state director and if necessary to the national director of the Selective Service System. These officers have the power to take appeals to the President.

B. Those junior and senior students who are disqualified physically for commissions are to be recommended for deferment to local boards by their deans. These students should enroll with the Procurement and Assignment Service for other assignment.

C. All junior and senior students in good standing in medical schools who have not done so should apply immediately for commission in the Army or the Navy. This commission is in the grade of Second Lieutenant, Medical Administrative Corps of the Army of the United States, or Ensign H. V. (P.) of the United States Navy

Reserve, the choice as to Army or Navy being entirely voluntary. Applications for commission in the Army should be made to the corps area surgeon of the corps area in which the applicant resides, and applications for commission in the Navy should be made to the commandant of the naval district in which the applicant resides. Medical R. O. T. C. students should continue as before with a view of obtaining commissions as First Lieutenants, Medical Corps, on graduation. Students who hold commissions, while the commissions are in force, come under the jurisdiction of the Army and Navy authorities and are not subject to induction under the Selective Service Act. The Army and Navy authorities will defer calling these officers to active duty until they have completed their medical education and at least twelve months of internship.

II. RECENT GRADUATES

On successful completion of the medical college course, every individual holding commission as a Second Lieutenant, Medical Administrative Corps, Army of the United States, should make immediate application to the Adjutant General, United States Army, Washington, D. C., for appointment as First Lieutenant, Medical Corps, Army of the United States. Every individual holding commission as Ensign H. V. (P.), U. S. Navy Reserve, should make immediate application to the commandant

of his naval district for commission as Lieutenant (J. G.) Medical Corps Reserve, U. S. Navy. If appointment is desired in the grade of Lieutenant (J. G.) in the regular Medical Corps of the U. S. Navy, application should be made to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

III. TWELVE MONTHS' INTERNS

All interns should apply for a commission as First Lieutenant, Medical Corps, Army of the United States, or as a Lieutenant (J. G.), United States Navy or Navy Reserve. On completion of twelve months' internship, except in rare instances in which the necessity of continuation as a member of the staff or as a resident can be defended by the institution, all who are physically fit may be required to enter military service. Those commissioned may then expect to enter military service in their professional capacity as medical officers; those who failed to apply for commission are liable for military service under the Selective Service acts.

IV. HOSPITAL STAFF MEMBERS

Interns with more than twelve months of internship, assistant residents, fellows, residents, junior staff members and staff members under the age of 45 fall within the provisions of the Selective Service acts, which provide that all men between the ages of 20 and 45 are liable for military service. All such men holding Army commissions are subject to call at any time and only temporary deferment is possible, on approval of the application made by the institution to the Adjutant General of the United States Army certifying that the individual is temporarily indispensable. All such men holding Naval Reserve commissions are subject to call at any time at the discretion of the Secretary of the Navy. Temporary deferments may be granted only on approval of applications made to the Surgeon General of the Navy.

All men in this category who do not hold commissions should enroll with the Procurement and Assignment Service. The Procurement and Assignment Service under the executive order of the President is charged with the proper distribution of medical personnel for military, governmental, industrial and civil agencies of the entire country. All those so enrolled whose services have not been established as essential

in their present capacities will be certified as available to the Army, Navy, governmental, industrial or civil agencies requiring their services for the duration of the war.

V. ALL PHYSICIANS UNDER FORTY-FIVE

All male physicians under 45 are liable for military service, and those who do not hold commissions are subject to induction under the Selective Service acts. In order that their service may be utilized in a professional capacity as medical officers, they should be made available for service when needed. Wherever possible, their present positions in civil life should be filled or provisions made for filling their positions, by those who are (a) over 45, (b) physicians under 45 who are physically disqualified for military service, (c) women physicians and (d) instructors and those engaged in research who do not possess an M.D. degree but whose utilization would make available a physician for military service.

Every physician in this age group will be asked to enroll at an early date with the Procurement and Assignment Service. He will be certified for a position commensurate with his professional training and experience as requisitions are placed with the Procurement and Assignment Service by military, governmental, industrial or civil agencies requiring the assistance of those who must be dislocated for the duration of the national emergency.

VI. ALL PHYSICIANS OVER FORTY-FIVE

All physicians over 45 will be asked to enroll with the Procurement and Assignment Service at an early date. Those who are essential in their present capacities will be retained and those who are available for assignment to military, governmental, industrial or civil agencies may be asked by the Procurement and Assignment Service to serve those agencies.

The maximal age for original appointment in the Army of the United States is 55. The maximal age for original appointment in the Naval Reserve is 50 years of age.

FRANK H. LAHEY, M.D., Chairman.

HARVEY B. STONE, M.D.

JAMES E. PAULLIN, M.D.

HAROLD S. DIEHL, M.D.

C. WILLARD CAMALIER, D.D.S.

SAM F. SEELEY, M.D., Executive Officer.

PROTECTION OF CIVIL RIGHTS OF PERSONS IN MILITARY SERVICE

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION

Designed to protect from impairment the civil rights of all members of the Army, Navy, Marine Corps, Coast Guard and all members of the United States Public Health Service detailed by proper authority for duty with the Army or Navy, a law was approved by the President, Oct. 17, 1940, commonly referred to as the Soldiers' and Sailors' Civil Relief Act of 1940. In substance, this law is an up-to-date revision of a similar enactment passed during the first world war, and its fundamental purpose is to free persons in the military service from harassment and injury to their civil rights during their term of military service and thus to enable them to devote their entire energy to the defense needs of the nation.

The provisions of the law, broadly stated, apply to persons on active duty with any branch of the services mentioned and to those in training or undergoing education under the supervision of the United States preliminary to induction into the military services who (1) may become defendants in a court action, (2) have dependents occupying a dwelling for which the agreed rent does not exceed \$80 a month, (3) may have contracted, prior to entry into service, for the purchase of real or personal property on the instalment plan, (4) may have obligations relative to mortgages on real or personal property, (5) may hold policies of life insurance of a face value not in excess of \$5,000, (6) may have taxes or assessments on real property falling due, (7) may have initiated or acquired a right to lands owned or controlled by the United States or (8) may become liable for income taxes. Generally the law provides remedies in the form of suspension of proceedings and transactions during the time a person is in the military service only when, in the opinion of the court, such person's opportunity and capacity to perform his civil obligations are impaired by reason of his being in military service.

GENERAL RELIEF

Before any judgment in default may be entered in any court, the plaintiff must file an affidavit showing either that the defendant is not in military service, that he is in such service or that the plaintiff is unable to determine whether or not the defendant is in service, as the case may be. If the absent defendant is in military service, the court must appoint an attorney to represent him and protect his interest. This attorney, however, will have no power to waive any right of the absent defendant or bind him by his acts. Unless it appears that the defendant is not in service, the court may require, as a condition before any judgment is rendered, that the plaintiff file a bond conditioned to indemnify the defendant, if in military service, against any loss or damage that he may suffer by reason of any judgment should the judgment be thereafter set aside in whole or in part.

If judgment is entered against a person while he is in service or within thirty days thereafter, application may be made for a reopening of the case not later than ninety days after the termination of the service, at which time any meritorious or legal defense may be interposed. Vacating, setting aside or reversing any judgment, however, will not impair any right or title acquired by any bona fide purchaser for value under such judgment.

At any stage thereof, any action or proceeding in any court in which a person in military service is involved, as either plaintiff or defendant, may be stayed by the court during the period of such service or within sixty days thereafter. Likewise the execution of any judgment or order entered against a defendant in service may be stayed and any attachment or garnishment of property, money or debts in the hands of another may be vacated or stayed. If an action for the compliance with the terms of any contract is stayed, no fine or penalty will accrue by reason of failure to comply with the terms of such contract during the period of the stay.

Any stay of any action, proceeding, attachment or execution ordered by the court may be ordered for the period of military service and three months thereafter and subject to such terms as may be just, whether as to payment of instalments in such a manner and at such times as the court may fix or otherwise. Where the person in military service is a co-defendant with

others, the plaintiffs may nevertheless by leave of court proceed against the others. The period of military service, the law provides, shall not be included in the running of any statutes of limitations.

RENTS

No eviction or distress may be made during the period of military service with respect to any premises for which the agreed rent does not exceed \$80 a month, occupied chiefly for dwelling purposes by the wife, children or other dependents of the person in service, except on leave of court. The Secretary of War or the Secretary of the Navy, as the case may be, is empowered, subject to such regulations as he may prescribe, to order an allotment of the pay of a person in military service in reasonable proportion to discharge the rent of premises occupied for dwelling purposes by the wife, children or other dependents of such person. This provision, it will be noted, applies only in connection with the rental of property used chiefly for dwelling purposes. It would seem to be inapplicable to premises used chiefly for office purposes. Legislation has been proposed to extend relief to persons in service in connection with leases executed for offices, but Congressional action on such legislation has not been completed.

INSTALMENT CONTRACTS AND MORTGAGES

No person who prior to the date of approval of the law has received a deposit or instalment of the purchase price under a contract for the purchase of real or personal property from a person who after the date of payment has entered military service may exercise any right or option under the contract to rescind or terminate it or resume possession of the property for nonpayment of any instalment falling due during the period of military service, except by action in a court of competent jurisdiction. The law, however, does not prevent the modification, termination or cancellation of any such contract or prevent the repossession or retention of property purchased or received under the contract, pursuant to a mutual agreement of the parties if such agreement is executed in writing subsequent to the making of the contract and during or after the period of military service of the person concerned. In any court action based on such contract, the court may order the repayment of prior instalments or deposits as a condition of terminating the contract and resuming possession of the contract, may in its discretion order a stay of proceedings for the period of military service and three months thereafter, or may make such other disposition of the case as is equitable to conserve the interests of all parties.

The law specifically provides, however, that no court may stay a proceeding to resume possession of a motor vehicle, tractor or the accessories of either, or for an order of sale thereof, where the property is encumbered by a purchase money mortgage, conditional sales contract or a lease or bailment with a view to purchase, unless the court finds that 50 per cent or more of the purchase price of the property has been paid. In any such proceeding the court may, before entering an order or judgment, require the plaintiff to file a bond to indemnify the defendant against any loss or damage that he may suffer by reason of the judgment should it be set aside in whole or in part.

Similar relief is afforded persons in service in connection with mortgages. The law applies only to obligations originating prior to its approval date and secured by mortgage, deed of trust or other security in the nature of a mortgage on real or personal property owned by a person in military service at the commencement of the period of service and still so owned by him.

INSURANCE PREMIUMS

With respect to life insurance policies, the law provides that on application by a person in military service the Administrator of Veterans' Affairs may guarantee payment of premiums in order to prevent lapsing or forfeiting of policies. Such persons may, within one year after leaving military service, pay off premiums unpaid by them and resume payments of regular premiums. If they fail to do so, the policy lapses and the cash surrender value accrues to the government to the extent neces-

sary to meet the cost of premiums which it has guaranteed. The Veterans' Administration is required to issue through suitable military and naval channels a notice for distribution to persons in military service explaining the benefits provided by the law in connection with life insurance policies and to furnish forms to be distributed to those desiring to apply for benefits.

The benefits are applicable to contracts of life insurance up to but not exceeding a total face value of \$5,000, irrespective of the number of policies held by the person, when the contracts were made and the premium was paid thereon before the approval date of the law or not less than thirty days before entering service. The benefits do not apply to any policy on which premiums are due and unpaid for a period of more than one year at the time when application for benefits is made, to any policy on which there is outstanding a policy loan of other indebtedness equal to or greater than 50 per cent of the cash surrender value of the policy, to any policy which is void or which may at the option of the insured be voidable in case of military service, or to any policy which as a result of military service provides for the payment of any sum less than the face thereof or for the payment of an additional amount of premium.

TAXES ON PROPERTY AND INCOME

If a person in service, or any person in his behalf, files with the collector of taxes, or other officer whose duty it is to enforce the collection of taxes or assessments, an affidavit showing (1) that a tax or assessment has been assessed on property as described below, (2) that such tax or assessment is unpaid and (3) that by reason of service the ability of the person to pay the tax or assessment is materially affected, no sale of the property may be made to enforce the collection of the tax or assessment, or any proceeding or action for such purpose commenced, except on leave of court granted on application made by the collector or other officer. The court is authorized to stay such a proceeding or sale for a period extending not more than six months after the termination of the period of military service of such a person.

When by law, however, such property may be sold or forfeited to enforce the collection of the tax or assessment, the person in military service has the right to redeem the property at any time not later than six months after the termination of service, but in no case later than six months after the date when the Soldiers' and Sailors' Civil Relief Act ceases to be in force. If any tax or assessment shall not be paid when due, such tax or assessment due and unpaid will bear interest until paid at the rate of 6 per cent per annum.

The benefits here discussed apply when any taxes or assessments, whether general or special, falling due during the period of military service in respect of real property owned and occupied for dwelling, agricultural or business purposes by a person in military service or his dependents at the commencement of the period of military service and still so occupied by his dependents or employees are not paid. The Secretary of War and the Secretary of the Navy are required to make provision, in such manner as each may deem appropriate for his respective department, to insure notice to persons in military service of the benefits accorded with respect to taxes and the action made necessary to claim these benefits in each case.

MEDICAL TRAINING CENTERS

A U. S. Army Medical Department Replacement Training Center became effective at Camp Joseph T. Robinson, Ark., January 15, bringing to 22,000 the number of medical trainees that can be trained in one training cycle. The Camp Robinson Center will have a capacity of 7,000, the same as the training center at Camp Grant, Ill., while the training center at Camp Lee, Va., has a capacity of 8,000 and the training center at Camp Berkeley, Texas, 4,000. Of this total of 26,000, about 4,000 constitutes overhead personnel, while the remaining 22,000 represent actual trainees for each training cycle. Plans are being made to increase the capacity of the training center at Camp Berkeley and perhaps that at Camp Robinson. At the

With respect to income taxes, the law provides that the collection from any person in military service of any tax on his income, whether falling due prior to or during his period of service, shall be deferred for a period extending not more than six months after the termination of his period of service, if the person's ability to pay the tax is materially impaired by reason of service. No interest on any amount of tax, collection of which is deferred, and no penalty for nonpayment of such amount during such period, will accrue for the period of deferment by reason of such nonpayment.

PUBLIC LANDS

The law provides, in general, that no right to any lands owned or controlled by the United States initiated or acquired under the laws of the United States, including the mining and mineral leasing laws, by any person prior to entering military service shall during the period of service be forfeited or prejudiced by reason of his absence from the land or his failure to perform any work or make any improvements thereon or his failure to do any other act required by or under such laws. Special provisions relate to homesteads, desert land entries, mining claims, mineral leases and irrigation rights. The Secretary of the Interior is required to issue through appropriate military and naval channels a notice for distribution to persons in service explanatory of the benefits of the law in connection with public lands and to furnish forms for use by persons desiring to apply for the benefits.

ADMINISTRATIVE REMEDIES

If in any proceeding to enforce a civil right in any court it is made to appear that any interest, property or contract has since the approval date of the law been transferred or acquired with intent to delay just enforcement by taking advantage of the benefits of the law, the court will enter such judgment or order as might lawfully be entered, the provisions of the Soldiers' and Sailors' Civil Relief Act to the contrary notwithstanding.

In any proceeding under the law a certificate signed (1) by the Adjutant General of the Army as to persons in the Army or in any branch of the United States service while serving pursuant to law with the Army, (2) by the Chief of the Bureau of Navigation of the Navy Department as to persons in the Navy or in any other branch of the service while serving pursuant to law with the Navy, (3) by the Major General Commandant, United States Marine Corps, as to persons in that corps or in any other branch of service while serving pursuant to law with the Marine Corps, or signed by any officer designated by any of them respectively, shall when produced be prima facie evidence as to any of the following facts stated in such certificates:

That the person named has not been, or is, or has been in military service; the time when and the place where such person entered military service, his residence at that time, and the rank, branch and unit of such service that he entered, the dates within which he was in military service, the monthly pay received at the date of issuing the certificate, the time when and the place where such person died in or was discharged from such service.

This law will remain in force until May 15, 1945. If at that time the United States is engaged in war, the law will remain in force until such war is terminated by treaty of peace proclaimed by the President and for six months thereafter.

Army Medical Field Service School, Carlisle Barracks, Pa., a class of 347 medical officers and a class of 231 enlisted men began a course of instruction in field duties. The enlisted men on graduation will receive commissions as second lieutenants in the Medical Administrative Corps.

DR. FRED RANKIN ORDERED TO ACTIVE DUTY

Dr. Fred Rankin, Lexington, Ky., President-Elect of the American Medical Association, has been called to active duty in the Office of the Surgeon General of the United States Army with the rank of Colonel. He will serve as consulting surgeon. He assumes active duty on March 1.

ORGANIZATION SECTION

OFFICIAL NOTES

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Program of Meetings to be Held in Chicago
February 16 and 17

The thirty-eighth annual congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 16 and 17. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 16, 10 A M

RAY LYMAN WILBUR, M.D., PRESIDING

Medical Care of Civilian Population During War

RAY LYMAN WILBUR, M.D., Stanford University, Calif
Chairman, Council on Medical Education and Hospitals

The Relation of the Chemist to Medicine

VINCENT DU VIGNEAUD, PH.D., New York
Professor of Biochemistry, Cornell University Medical College

(Topic to be Supplied)

RUFUS C. HARRIS, LL.D., New Orleans
President, Tulane University of Louisiana

The Relation of Pharmacology to Therapy

SOMA WEISS, M.D., Boston
Hersey Professor of the Theory and Practice of Physic, Harvard University

The War, the Colleges and Federal Aid

WILLIAM B. MUNRO, PH.D., LL.D., Pasadena
Professor of History and Government, California Institute of Technology

The Effect of the War on Medical Education in Canada

J. C. MEAKINS, M.D., Montreal, Quebec
Dean, McGill University Faculty of Medicine
RED LACQUER ROOM

MONDAY, FEBRUARY 16, 2 15 P M

RAY LYMAN WILBUR, M.D., PRESIDING

Current Medical Personnel Problems of the Army

COL. GEORGE F. LULL, M.D., Washington, D.C.
Chief, Personnel Division, United States Army Medical Corps (Representing the Surgeon General of the United States Army)

Medical Education from the Standpoint of the Navy Medical Corps

REAR ADMIRAL ROSS T. MCINTIRE, M.D., Washington, D.C.
Surgeon General, United States Navy

Needs of the Public Health Service for Medical Personnel in National Defense Activities

THOMAS PARRAN, M.D., Washington, D.C.
Surgeon General, United States Public Health Service

Selective Service and Medical Students

BRIG. GEN. LEWIS B. HERSHEY, Washington, D.C.
Director, Selective Service System

The Committee on Medical Preparedness of the American Medical Association

IRVIN ABELL, M.D., Louisville, Ky.
Chairman, Committee on Medical Preparedness of the American Medical Association, and Chairman, Health and Medical Committee of the Federal Security Agency

The Role of Medical Schools in the War

HAROLD S. DIEHL, M.D., Minneapolis
Dean, University of Minnesota Medical School, and Member, Procurement and Assignment Service for Physicians, Dentists and Veterinarians of the Office of Defense, Health and Welfare Services
RED LACQUER ROOM

TUESDAY, FEBRUARY 17, 9 30 A M

JOINT SESSION OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS AND THE FEDERATION OF STATE MEDICAL BOARDS

RAY LYMAN WILBUR, M.D. AND J. EARL MCINTYRE, M.D., PRESIDING

Citizenship as Related to Licensure

WALTER E. VEST, M.D., Huntington, W. Va.
President, Public Health Council, West Virginia Department of Health
Access to Hospital Records—Some Legal Aspects

T. V. McDAVITT, Chicago

Bureau of Legal Medicine and Legislation, American Medical Association

The Function of the State Hospital as an Educational and Social Agency

WINFRED OVERHOLSER, M.D., Washington, D.C.

Superintendent, St. Elizabeths Hospital

Accelerating Medical Training in Canada

E. STANLEY KIERSON, M.D., Toronto, Ontario

Assistant Dean, University of Toronto Faculty of Medicine

Summary of the Work of the Council on Industrial Health of the American Medical Association

S. J. SEEGER, M.D., Texarkana, Texas

Chairman, Council on Industrial Health

Teaching of Professional Ethics in Medical Schools

ARTHUR T. McCORMACK, M.D., Louisville, Ky.

State Health Commissioner

The Integrated Course in Anatomy

B. I. BURNS, M.D., New Orleans

Dean, Louisiana State University School of Medicine

RED LACQUER ROOM

THE FEDERATION OF STATE MEDICAL BOARDS

MONDAY, FEBRUARY 16

FEDERATION DINNER

6 30 P M

American Medicine and the National Emergency

MORRIS FISHBURN, M.D., Chicago

Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Presidential Address

J. EARL MCINTYRE, M.D., Lansing, Mich.

President, Federation of State Medical Boards of the United States

Round Table Discussion

ROOM SEVENTEEN

TUESDAY, FEBRUARY 17

FEDERATION LUNCHEON

12 30 P M.

ROOM NINE

TUESDAY, FEBRUARY 17, 2 15 P M

J. EARL MCINTYRE, M.D., PRESIDING

Industrial Health as Related to Licensure

C. O. SAPPINGTON, M.D., Dr. P.H., Chicago

Consultant

Licensure Problems in the District of Columbia

GEORGE C. RUHLAND, M.D., Washington, D.C.

Secretary-Treasurer, Commission on Licensure

Have Basic Science Laws Advanced the Practice of Medicine?

THOMAS J. CROWE, M.D., Dallas

Secretary, Texas Board of Medical Examiners

Revision of the Constitution and By-Laws of the Federation of State Medical Boards

T. V. McDAVITT, Chicago

Bureau of Legal Medicine and Legislation, American Medical Association

Business Session

RED LACQUER ROOM

CENTRAL COUNCIL FOR NURSING EDUCATION

MONDAY, FEBRUARY 16, 12 15 P. M.

Luncheon for Lay Boards of Hospitals and Public Health Nursing Organizations

Address

IRVING BLISS SANDER, PH.D., D.D., Evanston, Ill.

President, Northwestern University

GRAND BALL ROOM

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

Maine

Bills Introduced—S. 609X proposes, among other things, to amend the premarital examination law so as to provide that the required physical examination of each party to a proposed marriage may be made also by a physician duly licensed to practice outside Maine who is a graduate of a class A medical school. H. 1953X proposes so to amend the premarital examination law

as to permit any justice of the superior court or any judge to probate in his discretion on the joint application of both parties to a proposed marriage (1) to dispense with the requirements that both parties shall be examined by a licensed physician and shall undergo stated laboratory tests to ascertain the presence of a stated venereal disease or (2) to extend the period following the examination of the physician and the required laboratory test within which the marriage must be solemnized to not more than ninety days after the examination and test.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 327.

CALIFORNIA

Housman Imprisoned.—Dr. Nathan S. Housman, San Francisco, entered San Quentin Penitentiary on November 4 to start serving a one to fourteen year term for perjury which grew out of narcotic violations, newspapers reported on November 5. In his first trial Dr. Housman is alleged to have given perjured testimony on misdemeanor charges of failing to keep proper records of narcotic prescriptions (THE JOURNAL, Dec. 13, 1941, p. 2085).

Ear, Nose and Throat Meeting.—The Western section of the American Laryngological, Rhinological and Otological Society will meet at the Ambassador Hotel, Los Angeles, February 1. The speakers will be:

- Dr. Clarence J. Berne, Los Angeles, Minerals and Water Balance in Surgery.
- Dr. Burrell O. Raulston, Los Angeles, Discussion of Newer Sulfonamides.
- Dr. Howard F. West, Los Angeles, Diabetics Today.
- Dr. Rupert B. Raney, Los Angeles, Late Treatment of Tic Douloureux.
- Dr. Arthur C. Jones, Boise, Idaho, Use of the Diathermy Knife in Submucous Work.
- Dr. Jesse B. Naftzger, Los Angeles, Fractures of Facial Bones Involving Accessory Sinuses.
- Dr. Pierre P. Viole, Los Angeles, Intratemporal Repair of the Facial Nerve.
- Dr. Harrington B. Graham, San Francisco, A Case of Carcinoma of the Epiglottis Treated by the Cyclotron.

COLORADO

Personal.—Thomas D. Kroner, Ph.D., assistant professor of bacteriology, Colorado State College, Fort Collins, has been appointed to a similar position at the Louisiana State University, Baton Rouge, succeeding Charles S. McCleskey, Ph.D., who has been called to active service in the army.

Refresher Courses.—The Colorado State Medical Society will offer a series of refresher courses in Denver, February 16-17. One course will be given at the Denver General Hospital on "Treatment of Fractures and Allied Traumatic Conditions"; one at the Colorado General Hospital, "Acute and Chronic Pulmonary Conditions," and one at the Colorado Psychopathic Hospital, "Psychiatry for the General Practitioner." The series precedes the tenth Annual Midwinter Postgraduate Clinics to be held in Denver, February 19-21.

CONNECTICUT

Personal.—Governor Hurley recently appointed Dr. Charles John Satti Jr., New London, to be commissioner for the second district, under the workmen's compensation laws of the state requiring that one of the five commissioners be a physician. He succeeds Dr. James J. Donohue, Norwich. Dr. Satti graduated at Yale University School of Medicine, New Haven, in 1923. He was secretary of state during the administration of Governor Wilbur Cross.

Lectures on Hearing.—Dr. Norton Canfield, associate professor of otolaryngology, Yale University School of Medicine, New Haven, opened a series of lectures on hearing at the New Haven Hospital, New Haven, January 20, with a talk entitled "Physiology of Hearing Including the Fundamentals of Sound and the Anatomy of the Cochlear Mechanism." On January 22 he discussed "Audiometry"; January 27 he will speak on "Etiology of Deafness," and January 29, "Treatment of Deafness."

Health Service for Industrial Plants.—After a year's study, a program has been approved by the department of preventive medicine of Yale University School of Medicine and the New Haven Medical Association for servicing small industrial plants which have no medical service, except one of emergency. Wherever possible, the plan provides for participation by the family physician, especially in preemployment and periodic examinations. The consultative service is to complement rather than supplement the service available to industry by the bureau of industrial hygiene of the state department of health, and facilities are to be used for clinical teaching by the department of preventive medicine of the university. All

research data accumulated during the service will be used in an effort to decrease the incidence of disease. The project will be reviewed after a trial period of two years to consider its continuance.

DISTRICT OF COLUMBIA

Interprofessional Conference Formed.—Under the auspices of the Medical Society of the District of Columbia an Interprofessional Conference has been organized to bring together representatives of related professional groups for consideration of mutual problems concerning preservation of civilian health in Washington during the war emergency, the Washington Star reported, January 9. In the new setup are the District dental society, the District pharmaceutical association, Graduate Nurses' Association, Health Security Administration and hospital executives. The officers are Dr. Robert Lomax Wells, chairman; Dr. Valentine M. Hess, vice chairman, and Mr. Theodore Wiprud, secretary of the District medical society, secretary. The group plans to hold meetings as often as deemed advisable to keep the cooperating agencies informed on developments bearing on their responsibilities for maintenance of civilian health.

FLORIDA

Public Health Officers.—Dr. William H. Pickett, Jacksonville, state health officer, was elected president of the Florida Public Health Association at its annual meeting in Orlando, succeeding Dr. Leander J. Graves, Tallahassee, director of the Leon County health unit. Other officers are Dr. Leland H. Dame, Sebring, Katherine L. Corbin, Jacksonville, vice presidents; Lord N. Harlow, D.D.S., Jacksonville, president-elect of the Florida Dental Society, secretary-treasurer, succeeding Dr. Edward M. L'Engle, Jacksonville. The 1942 session will be in Miami.

Society News.—The Dade County Medical Society was addressed, November 5, in Miami by Drs. James M. McClamroch and Richard M. Fleming, Miami, on "Gunshot Wounds of the Abdomen."—Dr. Gerry R. Holden, Jacksonville, among others, discussed "Treatment of Menopausal Symptoms in Women with Especial Reference to the Use of Diethylstilbestrol" before the Duval County Medical Society in Jacksonville, November 4.—At a meeting of the Pinellas County Medical Society in St. Petersburg, November 6, Drs. William M. Davis, St. Petersburg, spoke on "Meralgia Parasthetica" and Arthur J. Bieker, St. Petersburg, "New Conceptions in Endocrinology."

Welfare Employees Must Refrain from Politics.—At a meeting of the county welfare board on November 26 new by-laws were adopted providing that "it shall be the policy of the board to require every employee to refrain from political activity," such activity to be cause for dismissal. At the same time it was decided to make a study of ways and means of tightening its free medical services. This action was based on past charges that politics has influenced the admission and treatment of some patients in the county home and hospital, the administration of which was transferred about a month prior to the meeting from the county commission to the newly appointed welfare board.

ILLINOIS

Dr. Kinnaman Goes to New Rochelle.—Dr. Joseph H. Kinnaman, deputy health commissioner and director of maternal and child health, Peoria City Department of Health, has resigned to become health officer of New Rochelle, N. Y. He will be succeeded by Dr. John A. Carswell, Milwaukee, associate executive secretary of the Wisconsin Anti-Tuberculosis Association, effective February 1. Dr. Kinnaman formerly was health commissioner of Topeka, Kan., assistant health commissioner of Cincinnati, instructor at the State University of Iowa College of Medicine, Iowa City, and deputy commissioner to the Iowa State Department of Health in charge of health and health education activities. Dr. Carswell graduated at the University of Toronto Faculty of Medicine in 1928.

Chicago

Meeting on Medical History.—The Society of Medical History of Chicago will be addressed in the Assembly Room at the Institute of Medicine of Chicago, Crerar Library, on January 27 by Drs. Stewart C. Thomson and Leo M. Zimmerman. Their subjects will be, respectively, "The Surgeon-Anatomists of Great Windmill Street" and "The Evolution of Blood Transfusion."

Society News.—Dr. Rettig Arnold Griswold, Louisville, Ky., among others, spoke before the Chicago Surgical Society, December 12, on "Treatment of the Wound in Compound Fractures"; Dr. Hiram Winnett Orr, Lincoln, Neb., discussed the talk.—The Chicago Medical Society was addressed, January

14, by John Howard Mueller, Ph.D., Boston, and Howard J. Shaughnessy, Ph.D., on "Virus and Rickettsial Diseases."—Dr. Delbert K. Judd, among others, addressed the Chicago Laryngological and Otolological Society, January 5, on "Pressure Changes in the Nose and Maxillary Sinus Under Normal Conditions and in Disease."—The Chicago Tuberculosis Society was addressed, January 22, by Drs. Andrew C. Ivy on "Physiology of Respiration in Pulmonary Tuberculosis" and Thomas F. Thornton Jr. and William E. Adams, "Resection of Lung Tissue in the Treatment of Pulmonary Tuberculosis."

Personal.—Five staff physicians of the Hospital of St. Anthony de Padua were recently guests of honor at a banquet at the Edgewater Beach Hotel in view of their long service to the hospital; they are Drs. John J. Sprafka, Frank J. Jirka, Chicago, Fred B. Olentine, Oak Park, Ill., Frank J. Pokorney, Cicero, Ill., and Joseph Zabokrtsky, each of whom was given a jeweled key.—Dr. Walter Schiller, chief of the pathology department at the Cook County Hospital, was named an honorary member of Phi Lambda Kappa at the fraternity's annual dinner, December 30. He will fill the honorary membership held by the late Dr. Jay F. Schramberg, professor of dermatology and syphilology at the University of Pennsylvania Graduate School of Medicine, Philadelphia. There are said to be only four honorary members in the fraternity.—Dr. Joseph B. De Lee was recently honored on his seventy-second birthday at the opening meeting of the Mothers' Aid of the Chicago Lying-In Hospital and Dispensary; Dr. De Lee founded the hospital.

KANSAS

Personal.—Dr. Ransley J. Miller, Topeka, has been appointed acting secretary of the Topeka Board of Health to succeed Dr. Charles B. Stephens, Topeka, who resigned.

Society News.—Dr. Willard M. Allen, St. Louis, addressed the Sedgwick County Medical Society in Wichita, January 6, on "Significance of Abdominal Vaginal Bleeding" and "Clinical Use of the Sex Hormones." The program was sponsored by the Kansas Obstetrical and Gynecological Society.—The Marion County Medical Society was addressed recently by Drs. Charles F. Taylor, Norton, on "Diseases of the Chest Simulating Tuberculosis" and William F. Stone Jr., Norton, "Contact Cases of Tuberculosis."—Dr. Peter T. Bohan, Kansas City, Mo., discussed "Causal Factors in Angina Pectoris and Coronary Infection" before the Pratt County Medical Society in Pratt recently.

LOUISIANA

Public Health Meeting.—Dr. Ford J. A. MacPherson, Baton Rouge, was chosen president of the Louisiana Public Health Association at its annual meeting in New Orleans on December 9. Dr. Reuben A. Brown, New Orleans, was chosen secretary-treasurer. The speakers at the meeting included Dr. John R. Heller Jr., U. S. P. H. S., Washington, D. C.; Ernest C. Faust, Ph.D., acting head of the department of tropical medicine of Tulane University of Louisiana School of Medicine, New Orleans; Dr. John A. Ferrell, New York, of the International Health Division of the Rockefeller Foundation, and Dr. Felix J. Underwood, Jackson, director of the Mississippi State Board of Health. A resolution was adopted at the meeting urging that the state health department provide accident, sickness and hospitalization insurance for its employees.

MAINE

Ear, Nose and Throat Meeting.—The Eastern section of the American Laryngological, Rhinological and Otolological Society met at the Eastland Hotel, Portland, January 15, for the following program:

Dr. Gabriel Tucker, Philadelphia, Observation on Tumors of the Larynx, Benign and Malignant.
Dr. Henry B. Orton, Newark, N. J., Significance of Hoarseness.
Dr. Frederick T. Hill, Waterville, Nasopharyngeal Fibroids.
Dr. Alexander S. MacMillan, Boston, X-Ray of Mastoids.
Dr. Harold G. Tobey, Boston, Acute Otitis Media and Mastoiditis.
Dr. Robert L. Moorhead, Brooklyn, Chronic Otitis Media.
Dr. James G. Dwyer, New York, Otitic Meningitis.
Dr. Champ Lyons, Boston, Chemotherapy in Otolaryngology.

NEBRASKA

Personal.—Dr. Benjamin F. Lorange, Auburn, the oldest physician in Nemaha County, was given a surprise dinner by members of the county medical society to observe his eighty-third birthday, December 6. In addition to carrying on his private practice he is serving as county physician.

New Negro Health Society.—The state medical journal announces that the Nebraska Negro Medical Society filed articles of incorporation with the secretary of state, Frank Marsh, November 20. The object of the new group is to promote health movements among Negroes in Douglas County, it was stated.

Society News.—Dr. George W. Covey, Lincoln, discussed "Vitamin Deficiencies and Anemias" before the Adams County Medical Society, Hastings, recently.—A recent meeting of the Madison Six County Medical Society was addressed in Norfolk by Drs. Edward J. Delehanty, Norfolk, on "Melancholia"; Abram E. Bennett, Omaha, "Electroencephalography as a Diagnostic and Prognostic Aid in Neurology," and Willard C. Brinegar, Norfolk, "The Parkinsonian Syndrome of the Acute Encephalitis."—The Tri-County Medical Society was addressed in Stratton, November 25, by Dr. Frank Lowell Dunn, Omaha, on "A New Approach to Physical Diagnosis of Chest Sounds"; Mr. M. C. Smith, Lincoln, executive secretary of the state medical association, discussed medical problems.

NEW YORK

Society News.—Dr. Henry P. Wagener, Rochester, Minn., discussed "Ocular Evidence of Systemic Disease" before the Buffalo Academy of Medicine in Buffalo, November 12.—Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, among others, addressed the one hundred and twenty-first annual meeting of the Medical Society of the County of Monroe in Rochester, December 16, on "American Medicine Prepares."

Graduate Course.—The Medical Society of the State of New York is sponsoring a course to be given before the Fulton County Medical Society alternately at Johnstown and at Gloversville. "The Treatment of Common Diseases" is the theme of the course which has been arranged by Dr. Clayton W. Greene. The program will be presented by the following speakers, all of Buffalo:

Dr. Francis D. Leopold, Results of Modern Methods in the Treatment of Anemia, February 6.
Dr. Louis Maxwell Lockie, Management of Arthritis, Acute and Chronic, February 13.
Dr. Ivan Hekimian, Practical Application of Hormonal Therapy, February 20.
Dr. Earl D. Osborne, Treatment of Common Skin Lesions, February 27.
Dr. Greene, Use of Sulfanilamide and Drugs of That Group, March 6.
Dr. David K. Miller, What Do We Know About Vitamins, March 13.

New York City

Dr. Ladd on Leave of Absence as Dean.—Dr. William S. Ladd has been granted a year's leave of absence as dean of Cornell University Medical College, because of illness. The late Dr. Walter L. Niles who had been appointed acting dean died while in office. Up to January 5 the trustees of the university had not yet appointed another acting dean.

Dr. Pappenheimer Receives Lilly Award.—Dr. Alwin M. Pappenheimer, professor of pathology, Columbia University College of Physicians and Surgeons, was the recipient of a prize of \$1,000 and a bronze medal from the Eli Lilly company for his work in developing a new science combining bacteriology, chemistry, physics and nutrition in the treatment of disease. The presentation took place during the annual banquet of the Society of American Bacteriologists, the American Association of Immunologists and the American Society for Experimental Pathology in Baltimore, December 30. Dr. Pappenheimer received his M.D. degree at Columbia in 1902. He has been associated with the teaching faculty since 1909, becoming professor in 1923. He has done extensive research in infectious and other diseases.

Healthmobile Dedicated.—The Healthmobile of the Brooklyn Tuberculosis and Health Association was dedicated on December 18. The speakers included Borough President John Cashmore of Brooklyn; Drs. Maurice J. Dattelbaum, Brooklyn, president of the Medical Society of the County of Kings; Kendall Emerson, managing director of the National Tuberculosis Association, and Dr. John L. Rice, city health commissioner. The Healthmobile will be used in the health education of children and adults, especially in areas where large groups of defense industry workers are employed. It was planned in cooperation with the board of education and the department of health and produced by the Brooklyn Tuberculosis and Health Association.

Sixty Years a Member of Infirmary Staff.—Dr. Annie S. Daniel, for sixty years a member of the staff of the New York Infirmary for Women and Children, was guest of honor at a dinner given by one hundred graduates of the infirmary. Dr. Daniel, who is in charge of the infirmary's outpatient service, graduated at Woman's Medical College of the New York Infirmary for Women and Children, New York, in 1879. The speakers at the dinner included Drs. Emily Lewi, Emily Dunning Barringer, president of the American Medical Women's Association; Sara Josephine Baker, Bellemead, N. J., consultant for the U. S. Public Health Service; Mary E. Childs MacGregor, Chatham, N. J., and Mary Lee Edward.

NORTH CAROLINA

Department of Neurosurgery Created.—The establish-

ment of a department of neurosurgery at Bowman Gray School of Medicine, Winston-Salem, was announced at an alumni banquet in Charlotte in December. Dr. Henry G. Schwartz, instructor in clinical neurologic surgery and instructor in neuro-anatomy, Washington University School of Medicine, St. Louis, has been appointed to head the new department, effective in July. Dr. Schwartz graduated at Johns Hopkins University School of Medicine, Baltimore, in 1932.

Obstetric Meeting.—The North Carolina Obstetrical and Gynecological Society was addressed at its annual winter meeting in Charlotte, December 5, by the following Charlotte physicians:

Dr. Otis Hunter Jones, X-Ray Studies of Pelvis and Fetal Pelvic Relationship.
Drs. Williamson Z. Bradford and Wallace B. Bradford, X-Ray Visualization of the Fallopian Tubes.
Dr. Ernest W. Franklin Jr., Analysis of Cesarean Section in Charlotte.
Dr. Oren Moore, Use of X-Ray in Obstetrics.

PENNSYLVANIA

Society News.—The Fayette County Medical Society was addressed in Uniontown, January 8, by Drs. Samuel A. Baltz, Uniontown, and Fred H. Harrison, Connellsville, on "Place of the Physician in Civilian Defense" and "Protection Against War Gases" respectively.—Dr. Adam C. Williamson, Pittsburgh, discussed "Care and Treatment of Prenatal Emergencies" before the Westmoreland County Medical Society in Latrobe, January 6.

Philadelphia

Course in Pathology.—The Woman's Medical College announced a course in pathology for physicians preparing for the specialty board examinations in obstetrics and gynecology, January 27 through May 12. Applications to take the course should be addressed to the Dean's Office, Woman's Medical College of Pennsylvania.

Society News.—The Northeast Branch of the Philadelphia County Medical Society devoted its meeting, January 2, to a panel discussion on "Chemotherapy Brought Up to Date"; the speakers were Drs. Jonathan E. Rhoads on surgery; Frank W. Konzelmann, laboratory; Pascal F. Lucchesi, communicable diseases, and Harrison F. Flippin, general medicine.—The Philadelphia Rheumatism Society held an open meeting, January 8, on "The Use of Chrysotherapy in the Treatment of Arthritis."

TEXAS

Neuropsychiatric Meeting.—The Texas Neuropsychiatric Association recently held its semiannual meeting at Houston, with the Galveston-Houston Psychiatric Society acting as host. Among the speakers were:

Drs. Ray K. Daily and James Greenwood Jr., Houston, Optochiasmatic Arachnoiditis. Preliminary Report.
Dr. Stephen Weisz, Galveston, Anxiety as a Symptom.
Dr. Jack A. Ewalt, Galveston, The Rorschach Test in Diagnosis of Psychiatric Disorders.
Dr. Robert C. L. Robertson, Houston, Water Balance as a Problem in Neurosurgery.

At the banquet in the evening Robert L. Sutherland, Ph.D., director of the Hogg Foundation of the University of Texas, among others, discussed the work of the foundation, which is designed for "the common good of all or any part of Texas."

WISCONSIN

Charles Crownhart Named Executive Secretary of State Society.—Charles H. Crownhart Jr., Madison, for years legislative counsel for the Wisconsin State Medical Society, has been appointed executive secretary to succeed his brother, the late J. George Crownhart. Mr. G. B. Larson, who has been acting secretary, will continue as assistant secretary.

Society News.—Dr. William A. Hilger, Milwaukee, discussed jaundice before the Milwaukee Academy of Medicine, November 18.—Dr. Creighton Barker, New Haven, Conn., executive secretary of the Connecticut State Medical Society, addressed the annual dinner meeting of the Medical Society of Milwaukee County, December 11, on "The Doctor in Wonderland."—Dr. Edward A. Schumann, Philadelphia, presented "Evaluation of Various Types of Cesarean Section" before the Milwaukee Society of Clinical Surgery recently.

MIDWAY ISLANDS

Society News.—The Midway Medical-Dental Society was addressed at its regular monthly meeting, November 10, by Dr. Khatchig H. Terts, on "Advances in Industrial Medicine" and Dr. Thomas A. Collins, "The Diagnosis and Treatment of Low Back Pain." The society was also addressed recently by Dr. Herbert G. Shepler on "Recent Advances in Chemotherapy." Dr. Charles R. Forrester is secretary of the society.

GENERAL

National Negro Health Week.—The twenty-eighth anniversary of National Negro Health Week will be held April 5-12. The theme "Opportunities in the National Defense Program for Improvement of Community Health" has been designated the special objective for 1942. Roscoe C. Brown, D.D.S., U. S. Public Health Service, Washington, D. C., is chairman of the National Negro Health Week Committee.

National Malaria Society.—At the twenty-fourth annual meeting of the National Malaria Committee in St. Louis, Nov. 11-13, 1941, the committee changed its name to the National Malaria Society. Officers are Leland O. Howard, Sc.D., Washington, D. C., honorary president; Mr. John H. O'Neill, New Orleans, president; Col. James S. Simmons, Washington, president-elect; Dr. Harold W. Brown, Chapel Hill, N. C., vice president, and Dr. Mark F. Boyd, P. O. Box 997, Tallahassee, Fla., secretary-treasurer. The society plans to publish an annual periodical to be known as the *Journal of the National Malaria Society*. Publication will be in charge of an editorial board appointed for three year terms. The initial board includes Col. Charles F. Craig, M. C., U. S. Army, retired, San Antonio, Texas; Justin Andrews, Sc.D., Baltimore, and Mr. Nelson H. Rector, assistant state director, malaria control, Mississippi State Board of Health, Jackson, Miss.

Meeting of Southern Surgeons.—Dr. Barney Brooks, Nashville, Tenn., was elected president of the Southern Surgical Association at its annual session in Pinehurst, N. C., Dec. 9-11, 1941, to succeed Dr. Harry H. Kerr, Washington, D. C. Other officers include Drs. Frank S. Johns, Richmond, Va., and Foy Roberson, Durham, vice presidents; Edward William Alton Ochsner, New Orleans, secretary, and Charles A. Vance, Lexington, Ky., treasurer. The 1942 session will be in Savannah, Ga. Among the speakers at the recent meeting were:

Dr. James C. Owings, Baltimore, Successful Experimental Ligation and Division of the Thoracic Aorta.
Dr. George C. Finney, Baltimore, Surgical Aspect of Congenital Absence of the Gallbladder with Report of Two Cases.
Dr. Vernon C. David, Chicago, Extension of the Indications for Radical Operation in Cancer of the Rectum.
Dr. Warfield M. Firo, Baltimore, Succinyl Sulfathiazole: A New Intestinal Antiseptic.
Dr. Harry J. Warthen Jr., Richmond, Va., Gas Gangrene: An Analysis of Seventy-One Cases Treated in Civil Practice.
Dr. Daniel L. Borden, Washington, D. C., Personal Observations During the A. M. A. Trial.
Dr. Amos R. Koontz, Baltimore, Are Selective Service Rejections an Index of the State of Our National Health?

Society of University Surgeons.—The fourth annual meeting of the Society of University Surgeons will be held at the Cincinnati General Hospital and Children's Hospital, Cincinnati, February 12-14, with headquarters at the Hotel Alms. The speakers will include:

Drs. Samuel J. Stabins and Andrew H. Dowdy, Rochester, N. Y., Carcinoma of the Breast.
Drs. Horace J. McCorkle and Edward E. Fong, San Francisco, Clinical Significance of Gas in the Gallbladder.
Dr. Ralph F. Bowers, New York, Treatment of Carcinoma of the Stomach in the Aged Individual.
Drs. Edward S. Stafford and John Staige Davis, Baltimore, Successful Construction of a Complete Extrathoracic Esophagus.
Dr. Forrest O. J. Young, Rochester, N. Y., Function of the Lower Jaw Following Partial Resection.
Dr. Alexander Brunschwig, Chicago, Operative Treatment of Cystadenomas of the Pancreas.
Dr. John D. Stewart, Buffalo, Vitamin A Metabolism in Obstructive Jaundice.

On Thursday afternoon February 12 there will be presented current problems in the program of clinical and experimental investigation by members and faculty of the Graduate School of Surgery of the University of Cincinnati.

Conference on Planned Parenthood.—The Birth Control Federation of America announces a three day conference on planned parenthood, to be at the Waldorf-Astoria, New York, January 28-30. Included among the speakers will be:

Pascal K. Whelpton, Scripps Foundation for Research in Population Problems, Oxford, Ohio.
Dr. S. Bernard Wotiss, New York, Medical Aspects of Planned Parenthood in a Post-War World.
Mrs. Christopher Fremantle, former editor, London *Mercury*, Planned Parenthood: A Report from Great Britain.
Dr. Mark V. Ziegler, Washington, D. C., U. S. Public Health Service, A Review of Public Health Services in the United States.
Newton Edwards, Ph.D., professor of education, University of Chicago, Education for Planned Parenthood in a Democratic Society.
Dr. Dorothy Boulding-Ferebee, Washington, D. C., chairman, family planning committee, National Council of Negro Women, Planned Parenthood as a Public Health Measure for the Negro Race.
Dr. John R. Rodger, Bellaire, Mich., Maternal and Child Health Program in Rural Areas.
Hazel Corbin, executive director, Maternity Center Association, New York. Prepared Parents: The Core of Creative Family Living.

At a clinic session on Friday afternoon the speakers will be Dr. Alan F. Guttmacher, associate professor of obstetrics,

Johns Hopkins University School of Medicine, Baltimore, on "The Contraceptive Clinic and Preventive Medicine"; Mrs. Stuart Mudd, director, Marriage Counsel, Philadelphia, "Counseling in Relation to the Clinic Patient," and Mrs. William Talbot, R.N., superintendent, Babies' Hospital, Philadelphia, "Relation of Maternal Health to Other Community Health or Social Agencies." The theme of discussion at the annual dinner will be "Population Planning as a Factor in a Democratic World" with the following speakers: Julian Huxley, British scientist and author; D. Kenneth Rose, national director of the Birth Control Federation of America, Inc., and Mrs. Frank P. Shepard, co-chairman, Metropolitan New York Committee, National Committee for Planned Parenthood.

Priceless British Museum Wrecked—Expression of Gratitude for American Aid.—Admiral Gordon-Taylor of England in December made a tour of the United States and Canada to express the gratitude of the medical profession in Great Britain for the aid given the British people during the bombing of their cities by the Germans. The British War Relief Society, Inc., 730 Fifth Avenue, New York City, has forwarded the Admiral's remarks concerning the destruction of the famous and priceless museum of the Royal College of Surgeons. He said that the Hunterian Museum of the Royal College was utterly wrecked by bombs. Its collection of specimens dealing with anatomy, comparative anatomy and surgical pathology was "undoubtedly the finest museum of its kind in the world and was the Mecca for surgeons from every country and the meeting place of anatomists, comparative anatomists and anthropologists generally.

The museum contained specimens of antiquarian as well as anatomical interest—the only mummy in the world exhibiting gallstones; the skeleton of the Irish giant O'Beirne, for which John Hunter paid in the victim's lifetime what Hunter (a Scot) considered a preposterously large sum. The giant's skeleton escaped intact and its preservation "is due to the aid given us by America."

The museum also possessed the world's finest collection of ornithologic skeletons, but of this collection of three thousand only four remain, although by a curious caprice the specimens surviving were the most valuable of all. They are the skeletons of the moa, the great auk and two solitaires. Sir Frank Colyer's valuable collection of comparative odontology also escaped, but of a large collection of skulls many were damaged and those of greatest value were destroyed. The president and council of the Royal college intend to reconstruct the museum on the old Hunterian lines and they are looking forward to the cooperation of surgeons of the allied powers in this task. The American College of Surgeons, touched by the disaster which befell the museum of an institution which cradled the American college in its infancy, has already made the handsome gesture of sending £2,000 to the Royal college for purposes of immediate relief. This is indeed, the Admiral said, a most friendly and greatly appreciated act on the part of surgeons from this side of the Atlantic.

Before the bombing began there were no fewer than a quarter of a million specimens. After the disaster the immediate problem confronting college authorities was how to salvage and convoy to safety what remained of the collection; means of transport were extremely scarce. Appeal was made to the American Ambulance Service in Britain maintained by the British War Relief Society in New York. Mr. Glenn Osborne of that service immediately came to the rescue, providing a fleet of ambulances in which seventy-eight loads of specimens were removed to safe places. It is notable that out of twenty-four thousand fragile specimens so moved only six were at all damaged during transport. "That is a tribute not only to the sound construction of the vehicles but to the skill and care of the women volunteer drivers. We have every reason for being grateful to the service and to its volunteer personnel for aid not only to museum specimens but to the living. The organization first proved its worth during the evacuation of Dunquerque. Of its aid then I had personal experience. Sick and wounded soldiers were being landed, often from small boats, at all sorts of out of the way points on the southeastern coast. Many of these evacuees needed immediate medical attention, which was provided by such means as were locally available. But this emergency assistance had to be supervised and supplemented by more expert aid. In transporting professional surgeons to the more hard pressed areas and in moving the injured inland, the cars of the American Ambulance Service in Britain did valiant work as I well know. I have reason to be especially grateful for aid rendered to myself in moving about under stress in my consultative capacity.

"The British people will never forget the help so willingly extended by the American people at that time. It should tend to bind us forever with a tie of mutual respect and affection that no evil power now or in the future can break."

LATIN AMERICA

First Congress of Internal Medicine.—The first Mexican Congress of Internal Medicine will be held in Mexico City, May 3-10, under the auspices of the president of Mexico and the Departments of Education and Public Health and with the cooperation of the medical societies of Mexico and the National University. The congress will be made up into various sections covering a wide range of subjects in this specialty.

Time Changed for Pan American Congress on the Child.—The eighth Pan American Congress on the Child will be held in Washington, D. C., May 2-9, instead of March 28-April 4. The session will be divided into three sections: Prevention of Diseases of Children and Medical Care, Education and Recreation, and Social Aspects of Protection of Children and Economical Help Through the Family. Papers to be presented must be received by the secretary before February 28 at the following address: Secretaria de Comité Uruguayo, Instituto Internacional Americano de Protección a la Infancia, Avenida 18 de Julio, No. 1648 (3er. piso), Montevideo, Uruguay.

CORRECTION OF CORRECTION

The Addis Count.—Dr. Ernest B. Zeisler of Chicago writes that an error is present in the correction entitled "Calculation of the Addis Count," which appears on page 2265 of THE JOURNAL of Dec. 27, 1941. Dr. Zeisler says that in the twelfth line of this correction the "0.4 sq. mm." should be "0.4 cu. mm.," and that in the thirteenth line the words "per cubic centimeter" should be deleted.

Government Services

Examination for Student Dietitians

The examination for student dietitians, which was to be held December 31, has been delayed until January 31. The announcement states that the salary for the student will be \$420 a year, less a deduction of \$330 a year for subsistence and quarters during the training period. Persons successfully completing the training course at the Army Medical Center will be eligible for retention in the service in dietitian positions paying \$1,800 a year. Communications should be addressed to the U. S. Civil Service Commission, Washington, D. C.

Dr. Thompson Named to Newly Created Health Service Position

Dr. Lewis R. Thompson, Washington, director of the National Institute of Health and assistant surgeon general in charge of scientific research, has been appointed chief inspecting officer of the U. S. Public Health Service, a new position established in the Office of the Surgeon General. As a result of the increased demands on the public health service because of the expansion of programs of civilian and military defense, the field activities of the district offices of the public health service and its liaison officers in the army corps areas have been consolidated under one head. Dr. Rolla E. Dyer has been named to succeed Dr. Thompson as assistant surgeon general in charge of the Division of Scientific Research and as director of the National Institute of Health, effective February 1. Dr. Thompson graduated at Louisville Medical College in 1905 and was commissioned in the public health service in 1910. In June 1917 Dr. Thompson was detailed as principal assistant of the director of health and chief quarantine officer of the Philippine Islands, succeeding to the position of chief quarantine officer two years later. In April 1921 he became the first chief of the newly established Office of Industrial Hygiene Investigations in the Division of Scientific Research, which is now an important division of the National Institute of Health and the coordinating agency for all industrial hygiene activities in the national defense program. He has been assistant surgeon general in charge of the Division of Scientific Research since August 1930. Dr. Dyer graduated at the University of Texas School of Medicine, Galveston, in 1915. On completion of his internship he was commissioned as assistant surgeon in the public health service, where he has advanced through the various grades. He has been assistant director of the National Institute of Health since 1922 and since 1937 also chief of the division of infectious diseases at the institute.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 6, 1941.

The Polish Faculty of Medicine at Edinburgh

A prominent example of German barbarity is the destruction of universities. From the Polish universities the professors, when not done away with quickly, were sent to notorious concentration camps. Libraries were closed and their books confiscated. For the large number of Polish physicians and medical students who found refuge in this country a Polish faculty of medicine has been established within the University of Edinburgh. At the Royal Society of Medicine the dean of the faculty, Prof. A. T. Jurasz, delivered an address on the subject. In July 1940 the remnant of the Polish army, which included many medical officers, was brought to Britain. In view of the large number of Poles in Scotland, Colonel Fortescue, deputy director of medical services, Scottish command, sought a means of occupying and refreshing the knowledge of the physicians among them. He consulted Professor Crew, who was in command of a military hospital. The latter arranged for batches of twenty Polish medical officers at a time to be attached to that hospital for periods of a fortnight. Further arrangements were made with the faculty of medicine of Edinburgh University and with the Royal Infirmary of Edinburgh whereby Polish medical officers might be spread among different departments and clinics, but linguistic difficulties impaired the success of the scheme. As many of the Polish medical officers had held academic positions in the Polish universities and there were among the troops many medical students whose studies had been interrupted by the war, Professor Crew suggested that these professors should be given facilities at Edinburgh to teach their countrymen in their own language and that the undergraduates should be allowed to complete their curriculum and graduate. The authorities of Edinburgh University readily granted the necessary hospitality, and the heads of departments of the faculty of medicine placed their resources at the disposal of their Polish colleagues. The board of the famous Royal Infirmary agreed to open their lecture rooms and wards to Polish professors, lecturers and students. More recently these have been given accommodation in the municipal hospitals. The secretary of Edinburgh University and the legal adviser to the Polish government worked out the constitution of the new school.

The teaching staff comprises six professors, seven lecturers and ten other specialists. Edinburgh professors have taken subjects for which Polish lecturers were not available. The curriculum and standards of teaching and examination are the same as those of the faculties of medicine of Polish universities. A Polish hospital named after Paderewski has been organized in the grounds of the Western General Hospital, Edinburgh. It has been equipped with American help and is intended for the treatment of Polish civil as well as military cases. It is staffed by members of the Polish faculty of medicine and contains eighty beds and an outpatient department. Surgical beds and the operating room and x-ray department of the Western General Hospital have been placed at the disposal of the Poles.

The school began with seventy-seven students, of whom forty-seven are serving in the Polish forces. Some thirty had finished their studies in Poland but had not passed their examinations, and refresher courses were arranged for them. Two Scottish professors—Sydney Smith and T. J. Mackie—examine in forensic medicine and bacteriology respectively. For the second academic year there are one hundred and twenty students of whom five are Czechs.

New Wartime Feeding Plans for Children and War Workers

In the House of Lords Lord Woolton, minister of food, stated that the government was anxious to extend the feeding of children in schools by local education authorities and would make grants for the purpose. War conditions had altered the nature of the problem. We were all now, as a result of the equalizing effect of the ration book, living on a diet mainly influenced by the extent of the domestic ration. This was based on the average need of the average family and was not designed to meet the needs of special classes, who might find the diet insufficient. This particularly held for children, who needed more than the average of body-building foods. At present there were five million children in the elementary and secondary schools, and only three hundred thousand of these receiving meals in school. We could now assure local education authorities that a sufficiency of food would be forthcoming, whatever the demand. Priority supplies had been arranged to enable schools to serve the balanced meals recommended by the medical and scientific advisers for maintaining the growth and health of school children. Extension of the milk in schools scheme would also come into operation at once. (It was stated next day in the House of Commons that every local authority in the country received instructions on the new drive for the feeding of school children. It is expected that one million school children will receive hot midday meals within the next twelve months.)

In wartime, said the minister, it was the duty of the government to see that there was supplied food adequate for maintaining the physical strength of the workers producing munitions for our allies and ourselves. This could be done thanks in large measure to the aid given by the United States on the one hand and by our farmers on the other. Food would be allocated to industrial canteens according to needs in three groups—for workers requiring meals of the most substantial kind, for those catering for other workers and for those who serve the rest of the population. Heavy workers required more meat, fish or cheese than office workers. In some forms of work more sugar was required than in others.

Lord Horder said that this was a red letter day in the annals of children's nutrition. He envied Lord Woolton because in years to come it would be to his credit that he had adopted the principle of preventing child nutrition being sacrificed during wartime by the bold move of increasing considerably the provision of standard meals at school. The organizing would not be easy; everybody must help.

Motor Cyclists Should Wear a Crash Helmet

In the *British Medical Journal* a surgeon, Mr. Hugh Cairns, has made a strong plea for the wearing by all motor cyclists of a crash helmet, such as is now worn by them when they race. During the first twenty-one months of the war 2,279 motor cyclists and pillion passengers were killed on the roads, 21 per cent more than during the corresponding months of peace. Head injury was present in over 90 per cent. The helmet recommended consists of an outer shell of some firm substance shaped like an inverted pudding bowl. It is lined with a series of web slings attached to the base and fitting snugly on the rider's head. The helmet is also retained in place by a chin strap. In 15 cases, seen by Mr. Cairns, of injury while wearing a crash helmet the effects were unusually mild except 1 in which a frontal fracture had been sustained. In all complete recovery took place. In most of them there was considerable damage to the helmet. It did not invariably prevent fracture of the skull, but it probably prevented the fracture from spreading as far as it otherwise would have done. In frontal injuries when there is no crash helmet the fracture

usually extends backward along the roof of the orbit and into the accessory nasal sinuses, whereas in the case mentioned the fracture was limited to the area of damage of the crash helmet. The brain damage in all cases was remarkably slight, as judged by absence of neurologic signs and by the promptness and completeness of the recovery of intellectual functions.

United States Ambulances for Wounded Airmen: Electrically Heated Blankets

The duke of Kent received in London from the American ambassador, Mr. J. G. Winant, two motor ambulances fitted with electrically heated blankets. These represent a much larger number of a new type, of which over thirty have been received and are in service overseas. Others are on their way. The duke of Kent said that road transport in winter tested the skill of nurses in keeping the patients comfortable, and it had appeared to the British-American Ambulance Corps that the only solution was electric heating, by which the blanket could be kept at an even temperature. Mr. Winant described the gift as evidence of the support of every section in the United States. Next to fighting for a great cause was the opportunity of helping those who risked their lives for it.

AUSTRALIA

(From Our Regular Correspondent)

Oct. 25, 1941.

The Medical Profession in New Zealand and Social Security Medical Services

Controversy regarding changes in the medical service in New Zealand has gone on for many years. In this small community of 1½ million people and about six hundred and fifty practicing physicians the standard of practice is high, and it is solely that this high standard might be maintained that the present deadlock between members of the profession and the government has developed. The New Zealand hospital system in the early days developed along the line that the provision of medical services for the sick poor was not a matter for private benevolence but a community responsibility. Such an attitude inevitably led to socialization of hospitals, and this process is now almost complete. The socialization of medical practice was first brought to light as a concrete proposal in 1927, when the New Zealand representative to the League of Nations signed a draft convention whereby the signatories undertook to introduce discussion of national health insurance into their legislatures. In 1934 the Hospital Boards Association issued tentative draft schemes for New Zealand, but none of these schemes allowed for the difference in character and distribution of population in New Zealand as distinct from that of Europe. In 1935 the Council of the British Medical Association set up the National Health Insurance Committee to investigate the position. This committee interviewed Dr. G. M. McLeary, Dr. Kaye Le Fleming, Dr. H. Guy Dain and later Sir Henry Brackenbury. After its review it concluded that further advances on the general lines of health insurance systems adopted by other countries would not meet New Zealand conditions.

At the end of 1935 the labor government swept into power, the strongest plank in its platform being national health insurance. Cooperation was immediately offered by the profession, which asked for the confidence of the government in any proposals it might decide on. The government set up an investigation committee in its first year of office and called evidence from various organizations. This committee was formed on a purely party basis, no one member possessing the technical or professional knowledge necessary to the successful delineation of such a scheme. However, the British Medical Association made representations, reviewing existing organizations, advocating greater attention to preventive medicine and research with complete service for those whose financial circumstances pre-

cluded the payment of medical fees and a contributory form of insurance for all others to enable them to provide against hospitalization, with laboratory and specialist fees. Such ideas were unacceptable to the government, which in turn expressed its intention of introducing a universal free medical service based on free general practitioners and specialists with vague references to payment of £1 per head of population plus mileage expenses, thus introducing in the view of the profession an undesirable degree of control of both doctors and public.

In 1937 Sir Henry Brackenbury, an advocate of national health insurance, visited New Zealand and after consultations with crown ministers and the association reviewed conditions, eventually admitting that, in addition to a free system being undesirable, the profession could not offer the public the present high standard of service for less than £1.11.6 per head of population, excluding specialist services. Battle was then joined. At the request of the minister of health a carefully drawn statement was prepared by the British Medical Association, explaining the curiously personal nature of a doctor's work. Medical service does not lend itself readily to terms of contract like the supply of a definite number of standard articles or the giving of so many hours of specific work. Modern methods of mass production and the moving work platform are not suitable for medical work. It became obvious at this stage that political considerations rather than those of practical necessities were to be paramount, one minister remarking that the association's scheme would "leave the doctors free to fix their own fees over a greater part of the work." Complete socialization and political control was obviously the government's aim. A parliamentary bill was drawn up on the lines of a universal scheme. No consultation with the profession was held, but the bill was passed in December 1938, after which negotiations between the association and the government ceased. Nevertheless preparations for the introduction of the scheme passed into abeyance, no explanation being forthcoming. With unconscious and rather satirical humor, the first benefit introduced was free mental hospital treatment, commencing on April 1, 1939, following which, in spite of protests by the association, a contract for maternity services was offered to the general practitioners. This failed. After many weeks a compromise was effected by allowing those doctors who so wished to continue the practice of obstetrics by private arrangement among patients willing to bear their own costs. The hospital benefit was introduced in July 1939. It was agreed by the profession that there could be no question of withdrawing honorary staffs, the feeling being that when hospitals ceased to be exclusively benevolent institutions it was no longer incumbent on the profession to give honorary service, especially as they were now open to all, exclusive of means. Consequently it was agreed to change to the part time stipendiary service. There were regrets—a loss of idealism as against the introduction of the wage earner's attitude of mind. With the passage of honorary service, medicine in New Zealand sustained a loss.

In the meantime war broke out and it became clear that the demands of war service were reducing the number of doctors available for civil practice. With free maternity and hospital benefits it was expected that the government would have the good sense to delay proposals for general practitioner service. But in February 1940 the government resumed negotiations with the association. The scheme was implemented by the drawing up of contract forms to be signed by both patient and doctor, the first of which were issued in March 1941. In spite of such cavalier treatment, the attitude of the association was clear. A deadlock had arisen. Contracts had been issued but not signed. After six weeks forty-nine doctors were reported to have signified their willingness to work the scheme, although they had not necessarily signed contracts. Now another compromise has been reached. A universal general practitioner

service, estimated to cost £1,400,000 a year, will commence on November 1. The service will not include specialist treatment, administration of anesthetics, examinations for insurance purposes, treatment of venereal disease or extraction of teeth by a doctor. The New Zealand public has been paying for the service since 1939 by a 1 shilling in the pound wage tax and a quarterly levy of 5 shillings. The Auckland branch of the British Medical Association states that doctors will issue receipts to patients, who may obtain refunds from the health department. Fixed charges are 7/6 for ordinary consultations and 12/6 for night or Sunday consultations plus 1/3 per mile for traveling. Members of the profession are asking for a non-political commission to investigate the problem of providing the best health services for New Zealand. Meanwhile, it has become increasingly evident that there is a serious shortage of qualified men to fulfil both the ordinary demands of civilian care and the special needs of the war.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 22, 1941.

Fertility of Patients with Mental Diseases

The question of the fertility of patients with mental diseases was discussed by Dr. E. E. Krapf of the Hospicio de las Mercedes in Buenos Aires before the Sociedad Argentina de Criminología. It concerned a critical evaluation of the German sterilization measures. Krapf said that there has been an alarming increase in socially unfit persons. One possibility to check this increase consists in the energetic reduction of the hereditary transmission of mental diseases. In the United States, in Switzerland and in Scandinavia legally regulated attempts have been made in this direction. The German sterilization law of 1933, a compulsory law, not only refers to mental defectives but is later to be extended to other persons whose propagation seems undesirable, such as habitual criminals and vagabonds.

In drawing up this law, it has not been considered that disease is rarely transmitted directly. The number of the schizophrenic, for instance, is estimated at 1 per cent of the German population, whereas the number of heterozygotes, who are apparently healthy but are capable of transmitting schizophrenia, is estimated by Rüdin at 19 per cent. These, who are the more dangerous, cannot be sterilized without leading to racial suicide. The Munich psychiatrist Bumke declared in 1939 that the relative increase in mental defectives is due to their greater fertility compared to that of healthy subjects. On the basis of these opinions Krapf contends that the central problem of every objective discussion of eugenic sterilization is the problem of absolute and relative fertility of mental defectives. The justification of compulsory sterilization will stand and fall with further investigations on this problem.

The percentage of hereditary cases is not yet known with desirable exactness, although the number of hereditary cases is doubtless quite high. Earlier investigations, which are concerned only with the feeble-minded and with the fertility of their fathers, are not conclusive for various reasons. However, an investigation by Dr. Juda at Rüdin's Munich institute demonstrated that the difference between the fertility of feeble-minded and normal subjects is really slight and that with exact statistical evaluation it disappears almost completely; that is, if the higher infant mortality in the families of the feeble-minded is taken into consideration. The fertility of the near relatives of the feeble-minded shows an analogous behavior. Thus these investigations, which, in view of their origin, are certainly decisive for the problem of sterilization in Germany, do not indicate a danger from progressive increase of the relative number of feeble-minded.

Statistically evaluated investigations on schizophrenia, conducted by the Swedish physician Essen-Möller at Rüdin's insti-

tute, disclosed that the fertility of the schizophrenic amounts to hardly 50 per cent of that of the normal population. Their low fertility is corroborated also by other investigations. Computations based on a frequency of 1 per cent, assuming a recessive monohybrid type of heredity lead to the conclusion that a complete sterilization of all the schizophrenic for twenty generations, that is, for six hundred years, would reduce their number to 10 per cent of the present number. According to results obtained by Essen-Möller the time required would be one thousand two hundred years, and even this computation is regarded as too optimistic if a considerable reduction of schizophrenia is to be obtained by sterilization. It was observed also that the number of schizophrenic sons of schizophrenic fathers is extremely small and that the larger number of these patients are the offspring of apparently healthy fathers, so that sterilizing intervention is impossible.

In persons with manic depressive insanity the investigations of Essen-Möller disclosed a fertility that was about identical with that of the normal population. Although a large percentage of these patients are the offspring of fathers with the same defect, other reasons make the suppression of this disease by sterilization impossible.

The fertility of the epileptic was disclosed by Essen-Möller to be less than that of normal persons and hardly higher than that of the schizophrenic. Moreover, the mortality of persons with epilepsy is eight times as high as that of normal persons, so that their propagation is greatly restricted. There is here the same tendency of self elimination as in case of schizophrenia, and here, as there, the direct heredity is not frequent. Thus there is only a slight possibility that the sterilization of epileptic fathers will produce a considerable reduction in the number of these patients.

Krapf also considers the fertility of habitual criminals. Again investigations in Rüdin's institute by F. Stumpfl demonstrated that habitual criminals are much less fertile than are occasional criminals and the average population, to which must be added the higher infant mortality of the first. This goes so far that Stumpfl speaks of the biologic self elimination of habitual criminals and their families.

None of the categories mentioned here have a higher than normal fertility, and therefore the aforementioned assertion of Bumke is not correct. Furthermore, it must be considered that before the defect is diagnosed and thus before there is a possibility of sterilization 67 per cent of the sons of the schizophrenic and 90 per cent of the sons of those with manic depressive insanity have already been born. This eliminates other foundations for sterilization and for this entire conception of public hygiene which only undermines confidence in the physician without promoting the welfare of the state. This investigation of Krapf has demonstrated definitely that it is impossible to avoid mental diseases by the systematic elimination of hereditary factors.

Marriages

ROY STINSON BIGHAM JR., Charlotte, N. C., to Miss Glenna Elvin Gochenour in Charlottesville, Va., Nov. 15, 1941.

JOSEPH ENNALLS MUSE JR., Baltimore, to Miss Anne Marie Gorman at Takoma Park, Md., Nov. 20, 1941.

GUSTAVUS A. PETERS, Franklin, Ind., to Miss Hilda Hartman in Rochester, Minn., Oct. 10, 1941.

RANDALL F. WHITE, Portland, Ore., to Mrs. Thelma Davenport of Eugene in October 1941.

EDWIN BURTIS AYCOCK to Miss Jean Hodges, both of Greenville, N. C., in November 1941.

DANIEL H. SHEERAN to Miss Rita Mary McGinnis, both of Flint, Mich., Sept. 27, 1941.

HARDIE B. ELLIOTT JR. to Miss Wilhelmina Meyer, both of Flint, Mich., Oct. 2, 1941.

Deaths

LeRoy S. Peters * Albuquerque, N. M.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; member of the American Association for Thoracic Surgery and the American College of Chest Physicians; fellow of the American College of Physicians; for many years a director of the National Tuberculosis Association; past president of the American Sanatorium Association and the Southwestern Medical Association; associate medical director of the Cottage Sanatorium, Silver City, from 1909 to 1913 and the Albuquerque Sanatorium from 1913 to 1917; medical director of the St. Joseph Sanatorium from 1917 to 1925; aged 59; died, Dec. 17, 1941, of coronary occlusion.

Everett A. Sheldon, Bellflower, Calif.; College of Medical Evangelists, Loma Linda, 1925; member of the California Medical Association; fellow of the American College of Surgeons; instructor in surgery at his alma mater; member, visiting staff, Long Beach Community Hospital, Long Beach; junior attending surgeon, Los Angeles County Hospital, Los Angeles; aged 40; on the courtesy staff of the White Memorial Hospital, Los Angeles, where he died, Dec. 2, 1941, of Banti's syndrome and hemorrhages from esophageal varices.

William Sturgis Thomas * New York; National University Medical Department, Washington, D. C., 1892; was president of the New York State Society of Pathologists; veteran of the Spanish-American and World wars; was made a Chevalier of the Legion of Honor by the French government; for many years served on the staff of St. Luke's Hospital in various capacities; in 1939 member of the advisory committee of the New York World's Fair; author of several books; aged 70; died, Dec. 21, 1941.

Laverty H. McCuskey, Moundsville, W. Va.; College of Physicians and Surgeons, Baltimore, 1897; member of the West Virginia State Medical Association; past president of the Marshall County Medical Society; member of the draft board during the World War; for many years county school physician; aged 71; died, Dec. 18, 1941, of coronary thrombosis.

Eugene Madison Parker * Houston, Texas; University of Illinois College of Medicine, Chicago, 1934; member of the Radiological Society of North America, Inc., and the American College of Radiology; on the staff of St. Joseph's Infirmary; aged 38; died, Dec. 4, 1941, in Granite City, Ill.

Stephen Aloysius Yesko, Washington, D. C.; Georgetown University School of Medicine, Washington, 1922; at one time assistant professor of anatomy at his alma mater; aged 45; died, Nov. 5, 1941, in the Garfield Hospital of gastric hemorrhage, esophageal varices and cirrhosis of the liver.

Robert Vandenberg White, Scranton, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1900; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 64; on the staff of the Hahnemann Hospital, where he died, Dec. 8, 1941.

Sidney L. Scott, Fredericksburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1901; New York Homeopathic Medical College and Hospital, New York, 1903; member of the Medical Society of Virginia; aged 62; died, Dec. 16, 1941, of coronary thrombosis.

Peter Augustine Reque * Brooklyn; University of Vermont College of Medicine, Burlington, 1896; fellow of the American College of Physicians; served during the World War; aged 72; died, Dec. 4, 1941, in the Long Island College Hospital of coronary occlusion.

Winfred Bryant Post * Carthage, Mo.; Missouri Medical College, St. Louis, 1897; member of the American Academy of Ophthalmology and Otolaryngology; on the staff of the McCune-Brooks Hospital; aged 70; died, Dec. 22, 1941, of coronary occlusion.

William Rhinehart Schick, Chicago; University of Illinois College of Medicine, Chicago, 1940; first lieutenant in the medical reserve corps of the United States Army; aged 31; was killed, Dec. 7, 1941, in action during the Japanese raid on Pearl Harbor.

Bina Seymour, Springfield, Mass.; New York Medical College and Hospital for Women, New York, 1913; aged 71; died, Dec. 8, 1941, in the Springfield Hospital of rupture of the abdominal aorta resulting from the pressure of a large calcareous plaque.

Richard Redner Rall * Lieutenant (j. g.) U. S. Navy, Pearl Harbor, T. H.; Loyola University School of Medicine, Chicago, 1934; entered the Navy Aug. 5, 1936; aged 32; was killed, Dec. 7, 1941, in action during the Japanese raid on Pearl Harbor.

William Samuel McCormick, Arlington, Tenn.; Memphis (Tenn.) Hospital Medical College, 1885; at one time justice of the peace; formerly chairman of the county court and of the county school board; aged 77; died, Dec. 16, 1941, in Memphis.

George M. Rutledge, Ste. Genevieve, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1889; member of the Missouri State Medical Association; aged 78; died, Dec. 10, 1941, in the Alexian Brothers' Hospital, St. Louis, of pneumonia.

Walter Fairbanks Sawyer, Fitchburg, Mass.; Harvard Medical School, Boston, 1893; member of the Massachusetts Medical Society; fellow of the American College of Surgeons; consulting surgeon, Burbank Hospital; aged 73; died, Dec. 8, 1941.

Hervey Barbour Scott, Irvine, Ky.; Hospital College of Medicine, Louisville, 1906; at one time assistant clinical professor of psychiatry at the University of Louisville School of Medicine; aged 62; died, Dec. 14, 1941, of lobar pneumonia.

William R. Williams, Greenville, Ind.; University of Louisville (Ky.) Medical Department, 1881; aged 84; died, Dec. 1, 1941, of injuries received when struck by an automobile as he was attempting to cross the street.

Louis Stockton Walton * Altoona, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; past president of the Blair County Medical Society; served during the World War; aged 64; died, Dec. 5, 1941.

Archibald Herbert Martin * Lynn, Mass.; College of Physicians and Surgeons, Boston, 1896; for many years on the staff of the Lynn Hospital; aged 69; died, Dec. 13, 1941, in the Palmer Memorial Hospital, Boston.

Clarence Henry Wieneke, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; member of the Illinois State Medical Society; aged 51; died, Dec. 15, 1941.

George Walter Warren, Washington, D. C.; Baltimore University School of Medicine, 1892; member of the Medical Society of the District of Columbia; aged 78; died, Dec. 15, 1941, in Wilson, N. C., of pneumonia.

William A. Phelps, Thebes, Ill.; Kentucky School of Medicine, Louisville, 1884; member of the Illinois State Medical Society; aged 86; died, Dec. 7, 1941, of cerebral arteriosclerosis and carcinoma of the face.

John Franklin Scarborough, Port Gibson, Miss.; Memphis (Tenn.) Hospital Medical College, 1910; member of the Mississippi State Medical Association; served during the World War; aged 61; died, Dec. 11, 1941.

William O. Ziemer, Cleveland; Western Reserve University Medical Department, Cleveland, 1904; on the staff of the Lutheran Hospital; aged 59; died, Dec. 2, 1941, of coronary sclerosis and myocardial infarction.

Franklin Ivan Flagg * Boston; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1921; was on the staff of the Boston State Hospital; aged 54; died, Oct. 10, 1941, of coronary thrombosis.

J. M. Teter, Beaver, W. Va.; Baltimore Medical College, 1896; member of the West Virginia State Medical Association; aged 68; died, Dec. 10, 1941, in the Raleigh General Hospital, Beckley.

Austin E. Popham, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1904; served during the World War; aged 62; died, Dec. 8, 1941, of cerebral hemorrhage and hypertension.

Russell Burton Main, Norris City, Ill.; Columbian University Medical Department, Washington, D. C., 1900; served during the World War; aged 64; died, Dec. 26, 1941, of heart disease.

DeWitt Clinton Smith, Dunkirk, Ohio; Miami Medical College, Cincinnati, 1874; aged 93; died, Dec. 5, 1941, in the McKittrick Hospital, Kenton, of angina pectoris.

Hilmar Carl Schmidt, North Hollywood, Calif.; Hering Medical College, Chicago, 1908; aged 66; died, Dec. 7, 1941, of coronary occlusion.

D. Manners Washburn, New Richmond, Ind. (licensed in Indiana in 1897); aged 90; died, Dec. 11, 1941.

Bureau of Investigation

FRAUDULENT "CURES" FOR ASTHMA, HAY FEVER AND SINUS DISORDERS

Post Office Department Debars Five of These from the Mails

In the twelve months from June 1940 through May 1941 five "cures" for asthma, hay fever and sinus troubles were declared fraudulent by the Post Office Department and banned from the mails

As-Ma-Norm—Under the title The Norm Company one Otto Beck of Englewood, N. J., sold this nostrum through the mails as an asthma treatment. Among the representations made in connection with its sale that the Post Office Department alleged were false and fraudulent were that it would afford effective relief in bronchial asthma, that it contained no harmful drugs and that its sale was approved of by the Post Office. Accordingly Beck was cited to show cause why a fraud order should not be issued against his business. He neither appeared at the hearing of the case nor sent a representative, though previously he had written the department that he was willing to abandon the enterprise. At the hearing a government chemist testified that the treatment came in gelatin capsules each of which contained 6.99 grains of yellow brown powder consisting of 4.48 grains of potassium chloride, 0.27 grain of ephedrine sulfate and the rest was rhubarb. An expert medical witness for the government brought out the fact that bronchial asthma is a symptom complex characterized by hypersensitivity to certain allergens or substances that produce bronchial spasms. These allergens may be ingested or inhaled or may be actual proteins existing in such in the victim's body. He further testified that the ingredients of As Ma Norm are common drugs whose therapeutic effects and limitations are familiar, and that rhubarb and potassium chloride offer no relief in asthma. He showed further that ephedrine, even when given in the proper dosage, which is from four to seven times the amount contained in As Ma Norm capsules, is only a temporary palliative employed in certain instances for the treatment or relief of asthma and that the amount of ephedrine obtained by users of As Ma Norm when taken according to directions is so small as to be inconsequential in the treatment of asthma. The witness further brought out, among other things, that ephedrine, instead of being a harmless drug, is deleterious to persons suffering from high blood pressure, diabetes, thyroid disturbances and heart trouble. On May 10, 1941 the Post Office issued a fraud order against the Norm Company and its officers and agents.

Dr. Hayle's Method—This piece of quackery, also known as "Dr. Hayle's Australian Method" and "Dr. Hayle's Treatment," apparently originated with a C. R. S. Woolams of Auckland, New Zealand, who operated under the names Charlton Sinclair, Limited and Charlton Sinclair, Manager. Its American agent was a Sylvan Mallinson, who did business from Los Angeles under the names of Gilbert H. Haddon and the Thyson Company. It was sold under the representations that it contained no harmful drug and that, when used as directed, it would within five minutes afford "amazing" and "magic like" relief from asthma and hay fever attacks and remove the causes of these, besides preventing further attacks. The Post Office investigation revealed that the "treatment" was made up for Mallinson by a Los Angeles pharmacy and sold in three parts: a liquid "Dr. Hayle's Prescription H. L. 67," composed essentially of potassium iodide, 9.8 grains per hundred cubic centimeters, a powder, "A. C. 43," consisting chiefly of potassium nitrate and sodium sulfate, carbonate and bicarbonate, and a saline, "B. 30," to be used in the nostrils, which contained camphor, menthol and eucalyptus in a petrolatum base. With these medicines went some "diet advice" directing the customer to eat sparingly of starchy foods and take liberal portions of fruits, vegetables and certain meats. The government presented expert medical testimony to the effect that one part of the treatment, instead of being harmless, contained potassium iodide, which might make its use dangerous in cases of asthma caused or complicated by tuberculosis, that the combination was not an amazing Australian formula, since its ingredients were all common drugs, and that it would not cure asthma or hay fever. Accordingly a fraud order was issued on June 4, 1940 against all the names under which the concerned operated.

Minus-Sinus—This was promoted by a Mrs. V. Herrick, who operated under the name Approved Products Ltd. Oak Park, Ill. A government chemist who analyzed it reported that it consisted of 49.55 per cent of sugar, 28.2 per cent of boric acid and 23.2 per cent of starch. It was to be snuffed into each nostril from the palm of the hand morning and night. Mrs. Herrick was cited to appear at a government hearing and show cause why a fraud order should not be issued against her business, but instead she merely filed a written answer which was in effect a general denial of the charges. At the hearing the government presented expert medical testimony showing that many factors may underlie sinus troubles and that since such disorders must be treated according to their causes no one method is of value in a large number of cases. Hence for Mrs. Herrick to represent her treatment as generally effective was declared to amount to false and fraudulent representation. A fraud order debarring the Approved Products, Ltd., and its officers and agents from the mails was issued on July 9, 1940 by the Post Office Department.

Orbert Asthma Treatment—From La Feria, Texas, a Mrs. E. G. Orbert, a farm housewife trading under the names M. Orbert and Orbert 5, promoted through the mails a "simple home treatment" for asthma and hay fever. No medicine was sold, but by sending \$1 the customer received a set of directions for treating the diseases named. First, he was told to "stop eating for three to four days" and live on grapefruit juice and oranges. Next, he was to follow a diet free from proteins and starches and to return to the "juice" program for a few days every two or three weeks. This regimen was to be followed until the customer was "completely relieved of the asthma." After that he was to live on a diet that resembled the vagaries of a "raw food" faddist. At the hearing of this case Mrs. Orbert did not appear or send a representative. Expert medical witnesses testified that Mrs. Orbert's generalized dietary was wholly worthless for effectively treating or permanently relieving either asthma or hay fever, as victims of these disorders would not be desensitized by omitting from their diets the foods proscribed in the Orbert "treatment." On the contrary, the evidence showed that asthmatic patients who followed the rather unvaried Orbert dietary measures might be even more subject to asthma than if they had never taken the "treatment." Accordingly, a fraud order was issued on May 28, 1940 debarring the Orbert scheme from the mails.

Shackleton's Inhaler and Shackleton's Inhaler Compound—These are put out by the Shackleton Inhaler Company of Grand Rapids, Mich., which up to around 1940 was said to be advertising that its inhaler had been "sold for 59 years." From inquiries sent to the Bureau of Investigation from 1918 to 1934 it appeared that the concern was located at Kansas City, Mo., during that period. Since 1935 it seems to have been doing business at Grand Rapids. Investigation by the Post Office Department revealed that the treatment consists of an inhaler and a "filler" which, according to a government chemist, is a water alcohol solution containing 81.6 per cent of alcohol, 0.34 Gm. per hundred cubic centimeters of methyl salicylate and 0.36 Gm. per hundred cubic centimeters of camphor, with pine tar, eucalyptol and balsamic substances. An expert medical witness testified for the government that though the vapor released from this mixture would give a mild temporary relief from nasal symptoms while being inhaled, its total drug action would be no more than that of a feeble irritant with no germicidal properties, would not dry up the secretions accompanying many respiratory disorders or constrict the mucous membranes of the nasal tract so as to remove any obstruction caused by engorgement thereof. He further testified that upper respiratory disorders are numerous and their causes so varied as to make it impossible to treat all of them effectively with any one stock preparation, such as the Shackleton product. Summed up, the evidence convinced the Post Office solicitor that the business was a scheme to obtain money through the mails by means of false and fraudulent pretenses, representations and promises and accordingly it was debarrred from the mails by a fraud order issued on Dec. 31, 1940 against the Shackleton Inhaler Company and its officers and agents.

VARIOUS "CURES" BANNED FROM THE MAILS

Abstracts of Some U. S. Post Office Fraud Orders

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some fraud orders not dealt with previously.

Acme Laboratory—This Kansas City, Kan. concern, also known as Acme Laboratories and run by a George A. Johnson, was charged by the Post Office Department with selling an eye treatment, "D. I. T.," through the mail under false and fraudulent representations. Among these were that the product would afford the quickest possible relief in counteracting infection of the eyes and overcoming swelling, burning and irritation, preserve and prolong normal vision, retard gradual loss of sight due to old age, dispense with the necessity of wearing glasses or the frequent changing of glasses caused by "old age eyes," and cure the disorders known as keratitis and conjunctivitis. The Acme people were further charged with selling by mail a product, "Oroseptol," under the fraudulent representation that it was a "powerful germ killer" and that it would remove the cause of, and restore to a normal healthy state, all soft, sore, bleeding and receding gums, cure pyorrhea and prevent any recurrence of these conditions or the necessity of tooth extraction, or that Oroseptol would overcome "common" sore throat, swollen tonsils, fever sores and other mouth and throat disorders regardless of their cause. At the hearing of this case a government chemist testified that D. I. T. came in two preparations, called "No. 1" and "No. 2," that the first named contained about 0.7 Gm. of boric acid per hundred cubic centimeters of the solution, plus some camphor and traces of acetaminol and epinephrine, and that No. 2 was an acid liquid consisting essentially of 0.25 Gm. of zinc sulfate per hundred cubic centimeters of the solution and a trace of iron. Further, the chemist testified that he had found Oroseptol to be a solution of soap, eucalyptol, pine oil and cinnamon. The government produced expert medical testimony which showed that neither of these treatments would be substantially effective for the conditions played up in the advertising and on Feb. 23, 1940 a fraud order was issued against the names Acme Laboratory and Acme Laboratories and their officers and agents debarring them from the further use of the mails.

Correct Sight Club—This outfit at Allentown, Pa., whose director was a James K. Bowen, sold through the mails some so-called instructions for the elimination of faulty vision. Among the false and fraudulent representations with which the Post Office Department charged it were that its instructions were "personal" to each remitter and would enable him to correct errors of refraction, far sightedness, near sightedness and astigmatism without the use of glasses, that by following these instructions he could restore healthy and natural eyesight and discard his glasses without loss of acuity and bring his "whole body" back to a "younger" stage of life. The instructions were found to consist of six lessons entitled respectively "Relaxation," "Details," "Look and See," "Instantaneous," "Steadiness" and "Shifting." At the hearing of this case the government produced an optical expert who testified that the treatment in question was an ineffective and unscientific one, and Bowen's testimony indicated a conspicuous lack of knowledge about the eye and its disorders. Accordingly, on Oct. 11, 1940 he was debarred from the mails by a fraud order issued against him, the Correct Sight Club and its officers and agents.

Der-Mo-Topic Laboratories—In January 1940 one W. F. Gilroy, president of this concern at Pittsburg, Pa., was ordered to show cause why a fraud order should not be issued against his firm for using the mails in selling "Der Mo Topic Medicated Special Cream" and "Der Mo Topic Psoriasis Cream" under false and fraudulent representations. Among these were that the first named product would remove hemorrhoids, acne, eczema, boils, humors, warts and other cutaneous disorders, besides preventing blemishes and overcoming dandruff, and that the "Psoriasis Cream" would cure psoriasis. In the hearing of this case by the Post Office Department it was revealed that these two products, although sold under different names, are one and the same thing, consisting essentially of about 0.4 per cent of iodine, about 1 per cent of coal tar and a trace of sulfur, all incorporated in a fixed oil base. An expert medical witness for the government testified that the conditions that Der Mo Topic products were represented to correct may be due to many causes which can be effectively treated only by scientific methods and that the Der Mo Topic products therefore would be of little avail. On March 2, 1940 the Post Office issued a fraud order debarbing the Der Mo-Topic Laboratories from the use of the mails.

Faultless Laboratories—This Nashville, Tenn., concern was run by a V. A. Tayntor, who also used the name L. B. Taylor in selling through the mails his "Sulpho-Matic" treatment. This he represented as a cure for all forms of rheumatism and a remedy for any case of stomach ulcers, liver, kidney and gallbladder troubles, nervous conditions, blood disorders, tumors, cutaneous diseases, hemorrhoids, fistula and pellagra. When ordered by the Post Office Department to show cause on Aug. 7, 1940 why a fraud order should not be issued against his business, Tayntor sent a letter denying the charges but did not appear at the hearing. The government produced expert medical testimony to show that rheumatism appears in too many forms and results from too many causes to be amenable to any one treatment and that the same could be said of the other diseases for which the Sulpho-Matic was advertised. Government chemists reported that it consisted of six aqueous solutions respectively containing the following (in grams per hundred cubic centimeters): A1 Morning, magnesium sulfate, 35; B4 Morning, magnesium sulfate, 38.3, an oily liquid with an odor of peppermint, 12, and a trace of sulfur, as well as indications of saccharin; A2 Noon, potassium bitartrate, 62, citric acid, 12.48, and anhydrous ferric oxide, 0.09, with wintergreen flavoring; B5 Noon, potassium bitartrate, 55; A3 Night, sulfur, 18.43, and gummy material, 4.54; B6 Night, sulfur 12.73, and gummy material, 4.10. On Oct. 2, 1940 the Post Office issued a fraud order against the names Faultless Laboratories, L. B. Taylor and their officers and agents, debarbing them from further use of the mails.

Marcell Mineral Laboratory—This Pasadena, Calif., concern was known also as The Marcell Mineral Company, The Miracle Mineral Laboratory, The Institute of Saneology and Virell, The Nature Man. It also used the name Don Marcell, but the Post Office Department's investigation brought out that the person behind it was an E. F. Marcell. He was reported to be a son of one Marcus B. Marcell, who had founded the business around 1920 in Portland, Ore., and apparently moved it to Pasadena some years later. Old records show that Marcus B. Marcell, who according to a Pasadena newspaper, died in August 1939, had claimed that he was a "naturopathic physician" and also was ordained in Pasadena in 1930 as "a Practitioner of the Spiritual Science Church." In spite of these learnings toward "drugless healing" cults, however, he ran a "patent medicine" business in which he was succeeded by his son, E. F. Marcell, promoting through the mails two nostrums. One of these, "Miracle Mineral No. 1," according to a government chemist, consisted of 35 per cent of sulfates (including those of sodium and potassium), 16.75 per cent of anhydrous ferric oxide and smaller amounts of silica, phosphate, and aluminum and magnesium oxides. The other, "Marcell's San O Min Miracle No. 2 Vaginal Suppository," the chemist reported, contained 16.1 per cent of anhydrous ferric oxide and lesser quantities of aluminum and magnesium oxides, sulfate, silica, sodium, potassium and phosphates. At the hearing of this case an expert medical witness testified for the government that the "No. 1 Miracle" could not purify the blood or benefit the liver, kidneys, skin or nerves as claimed, nor would the two nostrums remove the cause of female disorders, and that neither of the products was "absolutely harmless." Hence Marcell's representations for them were found to be a scheme for obtaining money by fraudulent means, and the mails were closed to the concern on Sept. 27, 1940. Incidentally the Minnesota Medicine reported in November 1940 that in the previous month Edward F. Marcell of Pasadena was fined \$400 plus cost of \$5.18 in a

district court in Minnesota for practicing medicine without a license in promoting a "health course" consisting of minerals in capsule form at \$58 per "patient" and was ordered to leave the state and cease advertising in the Minnesota papers.

Reed's Cut Rate Drug Store—This concern at Clarksburg, W. Va., had as proprietors a Lenard Gotlieb and his wife, Sara. They admitted to the Post Office inspectors, however, that they did not manage the store. Nevertheless, the Post Office investigation revealed that the Gotliebs used the store's name to carry on a mail order business in which they sold "Prescription Female Capsules" and auxiliary products for menstrual disorders. The Post Office developed evidence that an inquirer who wrote to the concern for an abortion treatment was advised to buy the "Female Prescription Capsules triple strength, a regular \$10.00 prescription that costs you \$7.50 plus tax." Further, the Post Office reported, the Gotliebs sent this inquirer the "prescription" with adjunct quinine and laxative preparations for accomplishing the purpose in question. The Post Office was convinced that the Gotliebs' business was illegal in its nature and also that it was carried on under the false, assumed and fictitious names of Reed's, Reed's Cut Rate and Reed's Cut Rate Drug Store, and on June 12, 1940 a fraud order was issued to debar the scheme from the mails. On October 22 another government agency, the Federal Trade Commission ordered Lenard and Sara Gotlieb, trading as Reed's Cut Rate Store and Fountain Cut Rate Stores at Clarksburg, W. Va., to cease and desist from certain misrepresentations. Among these were that their Prescription Female Capsules, also designated as "Lady Lydia Female Capsules," are a harmless and effective treatment for delayed menstruation, since the product might cause gastrointestinal disturbances, hemorrhage of the pelvic organs and, in the case of pregnancy, might produce uterine infection and blood poisoning. This case was abstracted in THE JOURNAL March 15 1941, page 1178.

Science Laboratories—This concern did business from Erie and Corry, Pa., selling through the mail "Panaroid" and "Bilada Tablets" for hemorrhoids and constipation and "Carthage" for sinus trouble. According to a government chemist's testimony in this case, Panaroid consisted essentially of phenol, tannin, alkaloids from belladonna, strychnium and possibly hyoscyamus with a small amount of epsom salt and ferric oxide. The analysis did not reveal the presence of three other drugs that the promoter claimed were present—quinine sulfate, lead acetate and benzocaine. The Bilada Tablets were reported to consist essentially of carbonates of calcium and sodium with cascara, phenolphthalein and a small amount of bile salts. Carthage, the chemist reported, was composed chiefly of ephedrine hydrochloride, ethyl aminobenzoate and oils of camphor, menthol, cinnamon and pine. As expert medical testimony for the government showed that these treatments were not as effective as represented, a fraud order was issued on March 22, 1940 debarbing the Science Laboratories from further use of the mails.

Washington Health Research Laboratories—Around 1936 one Ben S. Buckmaster was reported to be treating victims of cancer in the Tacoma, Wash., area with a medicine that he alleged was "a miracle cure" and had been handed down to him through four generations in his family. It developed that the stuff then consisted of balsam copaiba, spirit of niter and hairlem oil and was made up by a Tacoma druggist. In 1939, it is said, Buckmaster associated himself with a George Baydo in promoting the product as "Buck's Special Mixture." Within six months, however, the two men were said to have disagreed and each proceeded to put out the nostrum separately and to claim his was the original. One Tacoma man is said to have stamped as false a "testimonial" which he claimed Buckmaster pretended to have obtained from him. "Testimonials" also were used by Baydo in his circulars put out under the name Washington Health Research Laboratories. When he began to sell Buck's Special Mixture through the mails his scheme came within the province of the Post Office Department. Finally that agency ordered him to show cause on Sept. 18, 1940 why a fraud order should not be issued against his business, but instead of attending the hearing he merely sent a written reply denying the charges. The Post Office showed that Baydo had sold his "cure" not only for cancer but also for ulcers, tumors, tuberculosis, blood diseases, stomach and female disorders, eczema, hemorrhoids, rheumatism and some more things. In one case it was shown that Baydo had even represented it as a cure for syphilis and gonorrhea. A government chemist testified that the mixture consisted essentially of an alcoholic, oily fluid containing ethyl nitrite, sulfur and copaiba. As expert medical testimony showed that such a mixture would not cure any of the diseases enumerated, a fraud order was issued on Oct. 2, 1940 closing the mails to the Washington Health Research Laboratories, George Baydo and their officers and agents.

Z-Rin Products Co.—This concern at South Bend, Ind., had as its president and general manager a John Zriniv and sold through the mails "Zinex Special Ointment for overcoming 'pile conditions'" and "Z Rin" which was represented to cure the "agonizing" pains of various forms of rheumatism. At the hearing of the case a government chemist testified that the first named product was essentially a mixture of mercury and nitric acid combined in a weak or diluted amount of mercuric nitrate and that Z Rin was chiefly composed of salicylic acid, potassium acetate and common sugar, with small amounts of plant extractives including echinacea and cinerifuga. Since expert medical testimony was produced showing that these nostrums would not cure the conditions for which they were advertised, the Post Office on Sept. 13, 1940 issued a fraud order against the names "Z Rin Products" and "Z Rin Products Co." and John Zriniv.

Correspondence

EXCRETION OF SILVER IN URINE

To the Editor:—We have just read the communication by Dr. Victor Jacobson in *THE JOURNAL* of Nov. 1, 1941, page 1557. It may be of interest that one of our unpublished observations confirm his point of view that silver is not excreted in the urine. Some years ago we studied a case of obvious argyria, and we tried by the technics which we had used in cases of lead poisoning to withdraw the silver from its depots in the body. In spite of a prolonged investigation, with fairly heavy deleading treatment, no measurable amount of silver was ever found in the urine. From this we decided that lead and silver differed greatly in their metabolic responses in the body.

JOSEPH C. AUB, M.D.

LAWRENCE T. FAIRHALL, Ph.D.

Boston.

PSYCHOTHERAPY

To the Editor:—Dr. Andrew D. Hart Jr.'s comment in *THE JOURNAL*, Dec. 6, 1941 anent Dr. Roy Grinker's communication of October 18 contains many pertinent and justifiable criticisms of the attitude of the medical profession toward the neurotic patient.

Dr. Hart's apt quotation "It is the great error of our day in the treatment of the human body that physicians separate the soul from the body" is only partially true, for this quotation implies that the medical profession generally does not recognize or treat the "soul." As a matter of fact the "soul" is recognized and treated by every practicing physician every day whether he does it consciously or unconsciously. A good example of conscious psychotherapy is the immemorial use of the placebo. The adroit use of personality, or bedside manner, is an unconscious use of psychotherapy.

It is perhaps the undisciplined use of psychotherapy, whether conscious or unconscious, for which the average practitioner should be chiefly criticized. Add to this the impatient criticism of the "neurotic" in the unconscious of the physician and Dr. Hart's criticisms become fully justified.

How many of us are aware of the fact that the "bedside manner" produces a potent and at times inimical, at times beneficial, force which the psychologists term "transference"? Beneficially used, the transference is a therapeutic phenomenon of considerable value of which the average practitioner not primarily trained in the technic of psychotherapy is now almost completely deprived. In days gone by, in the days of the family doctor, there existed a much more perfect understanding between physician and patient. In those days the patient turned to his medical counselor for advice pertaining not only to medicine but also to his marital and family difficulties. He "exposed his soul" and received balm for it. Undoubtedly his body benefited thereby.

We all recognize the existence of psychologic components in our cases, but in most instances we do not analyze or identify them unless we are pursuing a clinical experiment. Here again, by the use of controls, we often give tacit acknowledgment to the existence of psychologic components.

It is our duty as physicians, if not inclined to devote the time or effort necessary for evaluating or analyzing the psychologic components in our patients' complaints, to refer them to properly qualified psychotherapists who should act as the catalyst welding together the busy doctor and his patient. Undoubtedly one difficulty heretofore has been the agnostic attitude of the profession generally. If the average medical practitioner is asked "What about psychotherapy?" he probably will answer "Well, there is something to it." That is a step forward. The nega-

tivistic skepticism of twenty years ago has been replaced by tolerant agnosticism. This is an indication of healthy progress in view of the fact that the scientific history of the last three hundred years has conditioned the medical profession against intangibles. It was only after Charcot, Freud and Pavlov that the psychologic factors were again recognized in health and disease. It is now a well accepted principle that many manifestations of psychogenic disorder are mediated through the various physiologic systems of the body. There is good evidence that thought itself has a physiologic basis. Psychotherapy today is not a specific and cannot control the psychologic processes by definite formulas. At best psychotherapy is still in its swaddling clothes. Whether it will develop into a full fledged science before medical therapy can take its place cannot be said.

It is still important that psychogenic disorders be not confused with organic pathologic conditions. A systematic psychiatric examination should be an integral part of every diagnostic process. This would often prevent many expensive and time consuming diagnostic laboratory procedures. Early discovery and correction of psychogenic pathologic conditions would prevent the creation of that tragic personality who goes from doctor to doctor becoming more and more discouraged, gaining a deeper sense of frustration and a more definite series of psychosomatic symptoms.

Obviously then, and despite his conditioning against intangible etiologic factors, it is the duty of the doctor of medicine to become more sympathetic toward psychotherapy as an adjunct rather than a separate entity both for his own and his patients' sake.

HYMAN MILLER, M.D.,

HAROLD F. FREY,

Los Angeles.

ADDRESS OF OLIVER WENDELL HOLMES TO THE MEDICAL STUDENTS—1861

To the Editor:—Eighty years ago on Nov. 22, 1861 Oliver Wendell Holmes, Parkman professor of anatomy and physiology at Harvard University, addressed the medical class and ended his introductory lecture, published at the request of the class, with the following stirring words:

"It is time to bring these crowded remarks to a close. The day has been when at the beginning of a course of lectures I should have thought it fitting to exhort you to diligence and entire devotion to your tasks as students. It is not so now. The young man who has not heard the clarion voices of honor and of duty now sounding throughout the land will heed no word of mine. In the camp or the city, in the field or the hospital, under sheltering roof or half protecting canvas or open sky, shedding our own blood or stanching that of our wounded defenders, students or teachers—whatever our calling and our ability, we belong, not to ourselves, but to our imperiled country, whose danger is our calamity, whose ruin would be our enslavement, whose rescue shall be our earthly salvation!

"You cannot all follow the armies of your country to the field. But remember that he who labors for the general good at home is an ununiformed soldier in the same holy cause with those who bear arms or minister at the side of the ambulance and in the camp hospital. Larrey claimed no precedence of Dupuytren, nor Guthrie of Sir Astley Cooper. As for the nobleness of the task for which you are preparing yourselves, I do not know that I can speak of it more strongly in prose than I did in the peaceful times before these days of trial, in the form of verse, and I will so far trespass on your time and patience as to close this lecture by reading you [The Two Armies, an original poem]."

The poem is rather long to reprint, but the inspiration of these words of the beloved Holmes should help all physicians in the fight to safeguard our heritage of individual and political freedom. The call to arms today is more urgent than it was even in 1861.

B. S. OPPENHEIMER, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, January 17, page 249.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, Feb. 9-11. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral. Part II.* Atlantic City, June 6-7. Final date for filing application is March 7. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* St. Paul, April, in advance of the meeting of the American College of Physicians, and Philadelphia, June, in advance of the meeting of the American Medical Association. Applications should be on file 6 weeks in advance of the date of oral examination. *Written.* Oct. 19. Final date for filing application is Sept. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: New York, June. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral. Part II.* Groups A and B Atlantic City, May or June. Final date for filing application is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, June 6 and Philadelphia, June 8. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral and Written. All Groups.* Philadelphia, June, preceding the meeting of the American Medical Association. Final date for filing application is March 1. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PATHOLOGY: St. Louis, March 30-31. Final date for filing application is Jan. 30. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, February 14. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* Boston, May 15-16. Final date for filing application is March 1. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: *Oral. All Groups.* Atlantic City, June 4. Final date for filing application is April 1. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written. Part I.* Various centers, March 2. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

New York Endorsement Report

The New York State Board of Medical Examiners reports 87 physicians licensed to practice medicine by endorsement from June 19 through September 9. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year of Grad.
Yale University School of Medicine.....	(1939) N. B. M. Ex.	
Georgetown University School of Medicine.....	(1934) Maryland,	
	(1938, 3), (1940, 5) N. B. M. Ex.	
Loyola University School of Medicine.....	(1928) California	
Rush Medical College.....	(1939) N. B. M. Ex.	
University of Chicago, The School of Medicine.....	(1939) N. B. M. Ex.	
State University of Iowa College of Medicine.....	(1931) Iowa	
Tulane University of Louisiana School of Medicine.....	(1937) Louisiana	
Johns Hopkins University School of Medicine.....	(1929) N. B. M. Ex.	
Boston University School of Medicine.....	(1938) N. B. M. Ex.	
Harvard Medical School.....	(1935), (1939) N. B. M. Ex.	
Tufts College Medical School.....	(1940) N. B. M. Ex.	
St. Louis University School of Medicine.....	(1938) N. B. M. Ex.	
University of Nebraska College of Medicine.....	(1936) Nebraska	
Albany Medical College.....	(1937, 2), (1938), (1940, 7) N. B. M. Ex.	
Columbia University College of Physicians and Surgeons.....	(1938), (1939, 2) N. B. M. Ex.	
Cornell University Medical College.....	(1933),	
	(1938), (1939, 2), (1940, 3) N. B. M. Ex.	
Long Island College of Medicine.....	(1939, 4), (1940) N. B. M. Ex.	
New York Medical College, Flower and Fifth Avenue Hospitals.....	(1939, 7), (1940, 4) N. B. M. Ex.	
New York University College of Medicine.....	(1938) N. B. M. Ex.	
University of Buffalo School of Medicine.....	(1939, 4), (1940, 5) N. B. M. Ex.	
Duke University School of Medicine.....	(1936), (1939, 2) N. B. M. Ex.	
Hahnemann Medical College and Hospital of Philadelphia.....	(1927) Quebec	
Jefferson Medical College of Philadelphia.....	(1886),*	
	(1933) Pennsylvania, (1936) Maryland, N. B. M. Ex.	

University of Penna. School of Medicine.....	(1918), (1939) N. B. M. Ex.
Womans Medical College of Pennsylvania.....	(1938) N. B. M. Ex.
Medical College of Virginia.....	(1939) N. B. M. Ex.
University of Virginia Department of Medicine.....	(1937) Virginia
Marquette University School of Medicine.....	(1940) N. B. M. Ex.
Medizinische Fakultät der Universität Wien.....	(1934) N. B. M. Ex.
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1934) N. B. M. Ex.
Universität Rostock Medizinische Fakultät.....	(1938) N. B. M. Ex.
American University of Beirut School of Medicine.....	(1940, 2) N. B. M. Ex.

* Licensed on endorsement of diploma.

California July Report

The Board of Medical Examiners of the State of California reports the written examination for medical licensure held at San Francisco, July 1-3, 1941. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and fifty-four candidates were examined, 149 of whom passed and 5 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists.....	(1940), (1941, 5)		6
Stanford University School of Medicine.....	(1939), (1941, 43)		44
University of California Medical School.....	(1941, 39)		39
University of Southern California Medical School.....	(1941, 10)		10
University of Colorado School of Medicine.....	(1940, 1)		1
George Washington University School of Medicine.....	(1940, 3)		3
Georgetown University School of Medicine.....	(1940, 1)		1
Loyola University School of Medicine.....	(1931), (1941)		2
Northwestern University Medical School.....	(1941, 2)		2
Rush Medical College.....	(1926), (1940)		2
University of Chicago, The School of Med.....	(1939), (1940, 2)		3
University of Illinois College of Medicine.....	(1941, 2)		2
State University of Iowa College of Medicine.....	(1940)		1
University of Minnesota Medical School.....	(1941, 3)		3
St. Louis University School of Medicine.....	(1941)		1
Washington University School of Medicine.....	(1939), (1940)		2
Creighton University School of Medicine.....	(1940, 3), (1941, 2)		5
Columbia Univ. College of Physicians and Surgeons.....	(1940)		1
University of Oklahoma School of Medicine.....	(1940, 2)		2
University of Oregon Medical School.....	(1937), (1938), (1940, 4)		6
Temple University School of Medicine.....	(1939)		1
University of Pennsylvania School of Medicine.....	(1940)		1
University of Tennessee College of Medicine.....	(1940)		1
University of Toronto Faculty of Medicine.....	(1940, 2)		2
Laval University Faculty of Medicine.....	(1940)		1
McGill University Faculty of Medicine.....	(1940, 5)		5
Medizinische Fakultät der Universität Wien.....	(1932)		1
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn.....	(1927)		1

School	FAILED	Year Grad.	Number Failed
Stanford University School of Medicine.....	(1941, 3)		3
Creighton University School of Medicine.....	(1940)		1
University of Nebraska College of Medicine.....	(1935)		1

Seventeen physicians were licensed to practice medicine by reciprocity and 8 physicians so licensed by endorsement of credentials of the National Board of Medical Examiners from August 5 through September 26. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1940)		Arkansas
University of Colorado School of Medicine.....	(1940)		Colorado
Loyola University School of Medicine.....	(1940)		Illinois
Northwestern University Medical School.....	(1937)		Ohio
State University of Iowa College of Medicine.....	(1936)		Iowa
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1932)		Maryland
University of Michigan Medical School.....	(1935)		Michigan
St. Louis University School of Medicine.....	(1939)		Missouri
University of Nebraska College of Medicine.....	(1923)		Nebraska
Columbia Univ. College of Physicians and Surgeons.....	(1929)		Arizona
Ohio State University College of Medicine.....	(1931)		Ohio
University of Cincinnati College of Medicine.....	(1934)		Minnesota
University of Oregon Medical School.....	(1932)		Oregon
University of Pittsburgh School of Medicine.....	(1930), (1932)		Penn.
Marquette University School of Medicine.....	(1932)		Michigan
(1938) Wisconsin			

School	LICENSED BY ENDORSEMENT	Year Grad.
College of Medical Evangelists.....	(1935), (1938), (1941)	
George Washington University School of Medicine.....	(1937)	
Harvard Medical School.....	(1937)	
Columbia University College of Physicians and Surgeons.....	(1937)	
University of Oregon Medical School.....	(1937)	
University of Vermont College of Medicine.....	(1911)	

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Abortion: Natureopath Convicted of Attempting to Procure Miscarriage.—The complainant, a married woman, was advised on June 3, 1940 by a physician that she was pregnant. About three weeks later she consulted the defendant, a licensed natureopath, concerning her condition, informing him that she had missed her last period and that she suspected pregnancy. The natureopath examined her. Subsequently she made six other visits to his office, being accompanied twice by her husband. On the suggestion of the natureopath, the husband purchased a catheter, which was given to the wife. Following the next visit to the natureopath the wife, apparently on the natureopath's suggestion, directed her husband to purchase another catheter. On at least one of the visits the natureopath inserted in her body one of the catheters, cutting off part of it, and told her to go home and go to bed. As a result of the defendant's treatment a miscarriage was produced. The natureopath was charged with committing "the crime of attempt to procure a miscarriage." At the trial the natureopath testified in detail as to what his examination of the complainant disclosed and the history which she gave him, including complaint of pain and spasm, and stated that on the information so obtained his diagnosis was that she was not pregnant but was suffering from metritis and stenosis of the womb with a consequent uterine congestion, which had interrupted her regular periods. He inserted the catheter, he testified, in the cervix to dilate it to relieve the pain and with no intention of performing an abortion. The natureopath was convicted and appealed to the Supreme Court of Errors of Connecticut.

The determinative question, said the Supreme Court of Errors, is whether or not the trial court was warranted on all the evidence in finding beyond a reasonable doubt that the natureopath had the guilty intent essential to conviction of the crime of attempting to procure a miscarriage. In urging that the trial court was not so warranted, the natureopath invoked the principle that, in determining whether evidence establishes guilt beyond a reasonable doubt, any conclusion reasonably to be drawn from the evidence consistent with the innocence of the accused must prevail. The defendant contended that the following facts, which appeared from the evidence, supported his claim as to the absence of a guilty intent on his part: entries under the date of the first visit of the complainant to his office of her name, of his diagnosis and of her payments, made in his desk book which he kept in his office with no attempt at concealment; the retention in his office likewise of the portion of the catheter not used; and his instructions to the complainant after treating her that in the event she became sick she should call a physician to take care of her, notwithstanding he knew that it would be the duty of the physician to report the situation if an abortion was involved. The natureopath also claimed that on the history given by the complainant to him and the physical condition revealed by his examination, the diagnosis which he made of stenosis of the cervix and excluding pregnancy was a possible one, that dilation of the cervix to relieve the pain is proper treatment of stenosis, and that the defendant, being but a natureopath, cannot be held to the same standards of skill and expert knowledge as a physician. Assuming, said the Supreme Court of Errors, that the purport of the evidence relied on should be construed to be as contended by the natureopath for the purpose of applying the principle in question, his claim cannot prevail because of other evidence in the record that the defendant did have guilty intent. The complainant made six visits to the natureopath's office and he was paid \$50 in four payments during the course of the treatment. The natureopath himself testified that he knew what the result of inserting the catheter would be if the complainant was pregnant and he stated, apparently to the officer who had arrested him, that on the 27th and 28th of June the complainant "came again and I cleaned the womb and she did not come around. . . ." This evidence, fortified by the testimony of the physician who had

made the original diagnosis of pregnancy that in his opinion the sole purpose of inserting a catheter in a woman's cervix is to produce an abortion, makes clear that the trial court could have properly concluded that the contentions of the natureopath went, at most, not further than to raise a possible, as distinguished from a reasonable, doubt as to his guilty intent. As such, it cannot avail the natureopath. The judgment of conviction was accordingly affirmed.—*State v. Santoro*, 22 A. (2d) 793 (Conn., 1941).

Malpractice: Qualifications of Expert Medical Witness; Admissibility of Photograph of Abdominal Scar.—The patient underwent an appendectomy in a private hospital conducted by the defendant physician. Bad results followed and it was subsequently necessary for the patient to submit to another operation for the repair of a ventral hernia, caused, contended the plaintiffs, by the defendant's negligence in making too long an incision for the appendectomy and in failing properly to suture the wound afterward. Accordingly the plaintiffs, the patient and her husband, each sued the defendant physician for malpractice. The two suits were consolidated for trial and, from judgments for the plaintiffs, the defendant appealed to the Supreme Court of Michigan.

The defendant contended that a photograph of the scar on the patient's abdomen had been improperly received in evidence. The evidence showed that the photograph was made after the trial was in progress and the testimony showed that the incision made by the defendant was lengthened by the second operation to repair the hernia, which was performed more than two years after the appendectomy. The plaintiffs claimed that the photograph was admissible because there was a question as to the length of the original incision, and that it was at least admissible to challenge on this point the credibility of the defendant's medical witnesses. The Supreme Court held that the admissibility in evidence of a photograph is largely within the discretion of the trial judge. In *Davis v. City of Adrian*, 147 Mich. 300, 110 N. W. 1084, the photograph of an ulcerated sore was held properly admitted when the jury had been instructed as to the consideration to be given to the accompanying testimony. In the present case, the trial judge stated, in the presence of the jury, that the picture was not admissible to show the length of the incision at the time the defendant operated and the jury was aware that the photograph had been taken after a second operation and during the trial of the case. The Supreme Court held that the rights of the defendant had been amply safeguarded by these statements of the trial court and concluded that the admission of the photograph was not an abuse of discretion.

The defendant relied mainly, however, on the contention that the plaintiffs had not produced any competent expert evidence of malpractice because the plaintiffs' only medical expert was not adequately qualified to express an opinion; that witness was permitted to testify as to the practice of surgery in Detroit and similar communities. The evidence showed that the witness had graduated from a medical school in Canada and was admitted to practice medicine and surgery in Michigan in 1902. Between 1902 and 1929 he practiced medicine, for periods of from a few months to a few years, in the upper peninsula of Michigan, in Chicago, in Perth, N. D., in British East Africa, in Alliance, Neb., in Mexico, in Blue Hill, Ainsworth, Gordon, Sidney and Potter, Neb., and other towns in Nebraska, Colorado and Louisiana. In 1929 he returned to Michigan and, after living in several communities, finally settled in Ferndale in 1932. This witness testified that he had never attended or witnessed any operation whatever in the city of Detroit or its vicinity, that he was acquainted with only one physician there, a physician with whom he once had a casual conversation, that "he never practiced, except as a consultant to some attorneys" and that he had not performed an operation for ten or twelve years. The question of competency, said the Supreme Court, is for the trial judge to determine, and he must decide within the limits of a fair discretion whether the experience of the witness had been such as to make his opinion of any value. Opinion evidence, the Court continued, may not be given by one who has no knowledge or experience. In ruling on the defendant's motion for a directed verdict, the trial judge seemed satisfied that the witness had no knowledge of the

medical standards in Detroit and similar communities and that this would disqualify him as an expert, but he nevertheless concluded that the issue concerned the weight rather than the admissibility of the testimony. The Supreme Court concluded otherwise, however, and held that the trial court erred in refusing either to strike the testimony of the witness or to instruct the jury that the opinion expressed by him was entitled to little or no weight. Accordingly the judgments for the plaintiffs were set aside and the cases were remanded to the trial court for a new trial.—*Perri v. Tassie (two cases)*, 292 N. W. 370 (Mich., 1940).

Medical Practice Acts: Use of Preposterous Mechanical Device for the Alleged Treatment of Human Ailments as Gross Immorality Justifying Revocation of License to Practice.—The appellant, Crum, after attending for one year the College of Drugless Physicians in Indianapolis, which the Supreme Court of Indiana in the reported case characterized as a diploma mill, graduated therefrom with the degree of doctor of naturopathy, doctor of electrotherapeutics, doctor of chiropractic and doctor of herbal materia medica. He was licensed without examination in Indiana under the so-called grandfather clause of the Indiana Medical Practice Act to practice chiropractic, naturopathy and electrotherapeutics. He established an office in Indianapolis and from time to time used numerous kinds of mechanical devices in the practice of the several "professions" he was licensed to practice in Indiana. In 1936 he obtained a United States patent on a mechanical contrivance, which he dubbed an "etherator" or "co-etherator," for the diagnosis and treatment of various human ailments. This machine was a small wood box with a number of holes in the front over which various colors of thin paper were pasted. On the inside was an ordinary light bulb with a cord for making contact with electricity. The bulb could be moved about so that light would penetrate the various paper-covered holes. The box also contained a quantity of disconnected wire and a glass tube filled with ordinary hydrant water. There was a pedal and a dial on the outside of the box, neither of which had any connection with the interior. Crum, in using this machine, would have the gullible patient moisten a slip of paper with saliva and deposit it through a slot on the top of the box, or Crum would make similar use of the patient's photograph or a specimen of his handwriting. After this was done, Crum would rub the pedal with his thumb and talk to the machine, repeating the popular names of diseases and organs of the body. By this procedure Crum claimed to be able to treat, relieve and cure cancer, blindness, arthritis, nervous disorders, hemorrhoids, abscesses, kidney ailments, stomach disorders, leakage of the heart, skin ailments, ovarian trouble, varicose veins and tumors. He also claimed that by so using the machine he could lengthen or shorten a patient's legs, cause amputated fingers to grow back into place and fill cavities in teeth by restoring them to their natural condition. According to his claim it was not even necessary for patients to be present or visit his office but that with the machine he could broadcast treatments to them wherever they might be located. The machine, he also claimed, enabled him to "administer 'financial treatments' by means of which money could be put into the hands of his patients"; and that the machine "could fertilize fields to a distance of 70 miles," kill dandelions and "treat golf greens . . . so that clover would turn brown and dry up and give the grass a chance to grow."

The state board of medical registration and examination, acting on a complaint filed with it that the claims made by Crum in connection with the use of this machine constituted "gross immorality," which under the medical practice act of Indiana was a cause for the revocation of a license to practice medicine or healing, revoked his various licenses to practice in Indiana. Crum appealed to the circuit court, Marion County, which found him guilty as charged, and he then appealed to the Supreme Court of Indiana.

Crum first contended that the allegations in the complaint filed with the state board of medical registration and examination do not amount to a charge of gross immorality. He reasoned that since he was licensed to practice chiropractic, naturopathy and electrotherapy, his right to do the things charged in the complaint was "recognized and legalized." It

is not necessary, said the Supreme Court, to define what properly constitutes the practice of chiropractic, naturopathy or electrotherapy or to enter into any extended discussion as to what conduct is forbidden by the term "gross immorality" as used in the Indiana medical practice act. It is enough to say that this Court will not judicially presume that the Indiana legislature intended to authorize a course of conduct so reprehensible and revolting as to shock the sensibilities of reasonable men. On the contrary, it must be assumed that in providing for licenses to practice possessed by Crum, the legislature intended that the methods employed in practicing under those licenses should bear some rational relationship to the alleviation of human illness. In the opinion of the Court, the allegations of the complaint sufficiently charged gross immorality.

Crum next contended that, since a section of the Indiana medical practice act forbids the board to discriminate against any school or system of medicine, to brand his practices as described in the complaint as immoral would require that his conduct be measured by the standards exacted by other schools of medicine and that this in turn would call for mere expressions of opinion rather than facts as to the curative value of his so-called treatments. The issues, he argued, raised by the charges are therefore beyond the inquisitorial purview of the board and without the reviewing jurisdiction of the courts. The complaint filed with the board, said the Supreme Court, discloses no such fundamental controversy between the concepts of hostile schools of the medical and healing sciences. The charge was, in effect, that Crum used a device of no possible therapeutic value under any recognized system of treatment and that he knowingly made false and fraudulent claims with respect to it for his own profit and to the injury of others. No licentiate of this state may rightfully claim the privilege so to practice. The fact that in the enforcement of the law the administrative agency and the courts may sometimes find it proper or convenient to consider the opinions of skilled and competent experts in determining the virtue of such practices does no violence to due process or vested rights. The complaint was sufficient.

The very mention of the extravagant claims made by Crum, continued the Court, is sufficient to suggest their untruthfulness and brand them as designedly fraudulent. His case is not helped by the fact that he produced numerous witnesses at the trial who voluntarily testified as to "miraculous" cures that had been brought about by the use of his machine. "Hope springs eternal in the human breast" and it is not uncommon for persons who are afflicted with dreadful diseases to be misled and beguiled into believing that they have been helped by quacks and charlatans. It is reasonable to suppose that by the enactment of the medical practice act it was the deliberate purpose and intention of the legislature to protect such unfortunate people from their own credulity. The evidence, in the opinion of the Supreme Court, was sufficient to justify the trial court in finding that Crum was guilty of gross immorality and that he was utterly unfit to be licensed by the state to treat human ailments. The action of the board in revoking his license was in effect affirmed.—*Crum v. State Board of Medical Registration and Examination*, 37 N. E. (2d) 65 (Ind., 1941).

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17. Dr. William D. Cutter, 535 North Dearborn St., Chicago, Secretary.

American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norval C. LaMar, 149 East 73d St., New York, Secretary.
Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.
Mid-South Post Graduate Medical Assembly, Memphis, Tenn., Feb. 10-13. Dr. Arthur F. Cooper, 165 Madison Ave., Memphis, Tenn., Secretary.
Pacific Coast Surgical Association, San Francisco and Del Norte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.
Society of Surgeons of New Jersey, Trenton, Jan. 28. Dr. Walter I. Mount, 21 Plymouth St., Montclair, Secretary.

Current Medical Literature

AMERICAN

The Association Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

68:851-1042 (Nov.) 1941

- *Significance of Bacteremia Caused by *Staphylococcus Aureus*: Study of 122 Cases and Review of Literature Concerned with Experimental Infection in Animals. D. Skinner and C. S. Keefer, Boston.—p. 851.
- Metabolism in Organic Hyperinsulinism: I. Quantitative Studies of Variations in Rate of Combustion of Carbohydrate Produced by Alterations in Diet. J. W. Conn and Elizabeth Stern Conn, Ann Arbor, Mich.—p. 876.
- Blood Sugar in Case of Complete Hypophysectomy. J. F. Hart and M. Magiday, New York.—p. 893.
- *Biologic False Positive Serologic Reactions in Tests for Syphilis: I. Occurrence in Normal Persons. C. F. Mohr, J. E. Moore and H. Eagle, Baltimore.—p. 898.
- Prognostic Value of Various Clinical and Electrocardiographic Features of Acute Myocardial Infarction: I. Immediate Prognosis. F. F. Rosenbaum, Ann Arbor, Mich., and S. A. Levine, Boston.—p. 913.
- *Importance of Dextrose Tolerance Test in Diagnosis of Marginal Malnutrition. G. W. Robinson Jr., P. Shelton and F. V. Smith Jr., Kansas City, Mo.—p. 945.
- Acute, Massive Hemoglobinuria of Obscure Cause, with Jaundice and Anemia: Report of Case with Clinical and Hematologic Studies and Measurements of Blood Pigment Metabolism. M. D. Altschule and D. R. Gilligan, Boston.—p. 957.
- Diseases of Adrenal Glands: I. Addison's Disease. E. J. Kepler and D. M. Willson, Rochester, Minn.—p. 979.
- Id.: II. Tumors of Adrenal Cortex, Diseases of Adrenal Medulla and Allied Disturbances. E. J. Kepler and F. R. Keating, Rochester, Minn.—p. 1010.

Bacteremia Caused by *Staphylococcus Aureus*.—Skinner and Keefer studied 122 cases of bacteremia caused by *Staphylococcus aureus*. Only 22 patients recovered. Several conditions are necessary for recovery. The blood stream must be cleared of bacteria and the infection localized and drained or allowed to resolve spontaneously. However, some patients die from the effects of infection even though their blood streams are cleared of organisms, and in them the soluble products (toxins) of the staphylococci are probably important. Presumably, the toxins in the patients who recover are neutralized and the organisms destroyed. Burnet showed experimentally that hemolytic, dermatonecrotic and lethal toxins were formed in vivo and that immunization did not protect animals against experimental infection. The evidence, though incomplete, indicates that man recovers only if the blood is cleared of organisms, the infection localized and the toxic effects of the infection neutralized.

Tests for Syphilis.—Mohr and his colleagues present cases which show that apparently normal, nonsyphilitic persons may temporarily or permanently possess a reagin or a reagin-like substance in the blood which reacts positively in standard serodiagnostic tests for syphilis. The biologically false positive reactions of the persons concerned were verified in different laboratories and by other methods than the supersensitive flocculation tests. Despite these false reactions, the authors suggest that it may be that the antibody present in syphilitic serum is strictly specific and that normal serum contains other substances with qualitatively similar effects on the lipoidal suspensions used as an "antigen." Thus, a normal serum may be capable of causing the aggregation of these lipoidal suspensions to cause clumping indistinguishable from that caused by syphilitic serum, even though the mechanism of the aggregation is dissimilar.

Marginal Malnutrition.—Robinson and his associates selected 5 patients whose condition was diagnosed as diabetes mellitus by the criteria of Exton and Rose; Gould, Altschuler and Mellen, and Matthews, Magath, Berkson and Gage. The authors attempted to show that although the 5 patients had

definite diabetic curves the curves were probably indicative of malnutrition. With proper treatment the curves have returned to normal and the patients have a normal carbohydrate metabolism without treatment. The patients had various types of mental disorders. Such patients, the authors say, are excellent material for studies in malnutrition, especially of the marginal type, because their habits and symptoms lead to this state, and these physiologic abnormalities will develop in any malnourished person. They believe that the dextrose tolerance test should be of value to the general practitioner as both in psychiatric and in general practice there are many patients with a history of easy fatigue and other symptoms of malnutrition in whose treatment the determination of the state of nutrition is an important factor. It was for these patients that the authors found the test and its interpretation of great value. When they first began to determine the dextrose tolerance curve routinely, they observed that the most disturbed curve occurred in patients with the most profound malnutrition. No other common denominator was demonstrable. This interpretation was confirmed by the return of the curve to normal after malnutrition was corrected. The psychosis had no effect on the curve. Some patients had a psychiatric recovery without the metabolism returning to normal, while in others the curve returned to normal while the psychosis was still as active as it had been at the time of admission. The authors consider dextrose tolerance a satisfactory test for the state of nutrition as well as for diabetes mellitus, and they believe that a diagnosis of diabetes mellitus should not be made for any patient with an abnormal dextrose tolerance curve until a full diet has been given for an appropriate period and the dextrose tolerance curve has not returned to normal.

Endocrinology, Springfield, Ill.

29:655-854 (Nov.) 1941. Partial Index

- Relation of Thyroid and Pituitary Glands to Iodine Metabolism. A. Chapman, Rochester, Minn.—p. 680.
- Extrathyroidal Iodine Metabolism. A. Chapman, Rochester, Minn.—p. 686.
- Epiphyseal Growth: Normal Sequence of Events at Epiphyseal Plate. T. H. Ingalls, Boston.—p. 710.
- Effect of Adrenalectomy on Carbohydrate Metabolism. G. Evans, Minneapolis.—p. 731.
- Effect of Testosterone Propionate on Various Responsive Organs of Immature Rats. W. Freeman and Rose Small, Worcester, Mass.—p. 758.
- Lesions of Bladder and of Prostate of Mice Receiving Pellets of Crystalline Estrone. H. Lisco, Boston, and G. R. Biskind, Baltimore.—p. 772.
- Conditions Influencing Course of Steroid Hormone Anesthesia. Helen Winter, Montreal, Canada.—p. 790.
- Serum Cholesterol in Rhesus Monkey. C. G. Hartman and W. Fleischmann, Baltimore.—p. 793.
- Studies on Stilbestrol: I. Some Effects of Continuous Injections of Stilbestrol in Adult Female Rat. J. A. Morrell and G. W. Hart, New Brunswick, N. J.—p. 796.
- Id.: II. Effect of Massive Doses on Normal Immature Female Rats. J. A. Morrell and G. W. Hart, New Brunswick, N. J.—p. 809.
- *Effect of Large Doses of Estrogens on Blood Picture of Dogs. R. Tyslowitz, Boston, and Elisabeth Dingemanse, Amsterdam, The Netherlands.—p. 817.
- Diabetogenic Effect of Stilbestrol in Force Fed Normal and Partially Pancreatized Rats. D. J. Ingle, Philadelphia.—p. 838.
- Insulin Concentration in Blood of Normal and Pancreatized Dogs. E. Gellhorn, J. Feldman and A. Allen, Chicago.—p. 849.

Estrogens and Anemia.—Tyslowitz and Dingemanse state that anemia develops in healthy dogs after treatment with large doses of estrogenic substances (theelin, estradiol benzoate and diethylstilbestrol). Androgenic substances (testosterone or its propionate) do not produce anemia even after months of treatment. The most striking effect was a fall in the erythrocytes, reticulocytes and thrombocytes. Granulocytopenia often occurred after an initial leukocytosis with a shift to the left. The anemia was hyperchromic at first and later it became normochromic or hypochromic. The total quantity of estrogen tolerated depended on the daily dose; a dose of 5 mg. daily for sixteen to forty days was fatal for a dog of 10 Kg. (22 pounds), while the administration of 1 mg. daily for as long as nine months appeared harmless. The simultaneous administration of estrogens and liver extracts did not prevent the anemia. The course of the anemia, the differential leukocyte count and the frequent occurrence of granulocytopenia point to a primary injury to the bone marrow.

Indiana State Medical Assn. Journal, Indianapolis**34:581-658 (Nov.) 1941**

- Aviation Medicine. L. H. Bauer, Hempstead, N. Y.—p. 582
 Endocrine Treatment in General Practice. C. Mazer, Philadelphia—p. 584.
 Management of the Juvenile Diabetic. M. R. Shafer, Indianapolis.—p. 588.
 Management of the Adult Diabetic. R. H. Beeson, Muncie.—p. 591.
 Management of Diabetes in the Senile. B. M. Edlavitch, Fort Wayne.—p. 593.
 Essentials in Fracture Treatment. J. J. Moorhead, New York.—p. 595.
 Sulfadiazine: New Chemotherapeutic Agent. H. M. Powell and K. K. Chen, Indianapolis.—p. 602.

Iowa State Medical Society Journal, Des Moines**31:511-562 (Nov.) 1941**

- The Medical Citizen of 1941. N. B. Van Eten, New York.—p. 511.
 Sinus Disease: Some Practical Considerations. S. Salinger, Chicago.—p. 514.
 Industrial Ophthalmology. G. C. Struble, Ottumwa.—p. 521.
 Treatment of Pneumonia. B. F. Wolverton, Cedar Rapids.—p. 526.
 Metrazol Convulsive Therapy of Mental Disease. I. Zifferstein, Mount Pleasant.—p. 531.
 Modern Treatment by X Ray. Aileen Mathiasen, Des Moines.—p. 533.
 Acute Pancreatic Necrosis: Unsolved Acute Abdominal Disease. W. L. Downing, LaMars.—p. 538.

Journal of Clinical Investigation, New York**20:607-800 (Nov.) 1941**

- Cause of Death in Experimental Anuria. H. E. Hoff, P. K. Smith and A. W. Winkler, New Haven, Conn.—p. 607.
 Thiamine Content of Human Blood and Urine as Determined by Fermentation Method. R. Goodhart, with technical assistance of Theodora Nitzberg, New York.—p. 625.
 Note on Interpretation of Clearance Methods in Diseased Kidney. H. W. Smith, New York.—p. 631.
 Effective Renal Blood Flow in Subjects with Essential Hypertension. W. Goldring, H. Chasis, H. A. Ranges and H. W. Smith, New York.—p. 637.
 *Effective Renal Blood Flow in Separate Kidneys of Subjects with Essential Hypertension. H. Chasis and J. Redish, New York.—p. 655.
 *Epidemic of Influenza. Results of Prophylactic Inoculation of Complex Influenza A Distemper Vaccine. J. W. Brown, M. D. Eaton, G. Meiklejohn, J. B. Lagen and W. J. Kerr, Berkeley, Calif.—p. 663.
 *Circulatory Failure in Acute Infections. R. V. Ebert and E. A. Stead Jr., Boston.—p. 671.
 Studies on Intrapulmonary Mixture of Gases. IV. Significance of Pulmonary Emptying Rate and Simplified Open Circuit Measurement of Residual Air. A. Courmand, Eleanor DeF. Baldwin, R. C. Darling and D. W. Richards Jr., New York.—p. 681.
 Comparison Between Dehydration from Salt Loss and from Water Deprivation. J. W. Nadal, S. Pedersen and W. G. Maddock, Ann Arbor, Mich.—p. 691.
 Calculation of Venous Arterial Shunt in Congenital Heart Disease. M. Prinzmetal, Los Angeles.—p. 705.
 Plasma Levels of Vitamin A After Ingestion of Standard Doses: Studies in Normal Subjects and Patients with Cirrhosis of Liver. Elaine P. Ralli, E. Bauman and L. B. Roberts, New York.—p. 709.
 Hemodynamic Effects of Angiotonin in Normal Man. S. E. Bradley and Barbara Parker, New York.—p. 715.
 Nature of Arterial Hypertension Produced in Normal Subjects by Administration of Angiotonin. R. W. Wilkins and C. N. Duncan, Boston.—p. 721.
 Some Properties of Human Fetal and Maternal Blood. R. C. Darling, C. A. Smith, E. Asmussen and F. M. Cohen, Boston.—p. 739.
 Metabolic Studies in Patients with Cancer of Gastrointestinal Tract. I. Plasma Vitamin A Levels in Patients with Malignant Neoplastic Disease, Particularly of Gastrointestinal Tract. J. C. Abels, Alice T. Gorham, G. T. Pack and C. P. Rhoads, New York.—p. 749.
 Fractionation of Serum Proteins in Hyperproteinemia, with Special Reference to Multiple Myeloma. A. B. Gutman, D. H. Moore, Ethel Benedict Gutman, Virginia McClellan and E. A. Kabat, New York.—p. 765.

Renal Blood Flow in Hypertension.—Chasis and Redish used the clearance method to measure the renal blood flow of the separate kidneys of 21 patients with essential hypertension. The results indicate that the destruction of tubular tissue progresses equally on the two sides in hypertensive disease and that the functional disturbance in the blood flow and the filtration rate is shared equally by the two kidneys. There was no indication of unilateral renal ischemia. The study refutes the widely accepted premise that unilateral renal disease in man is the primary cause of arterial hypertension.

Prophylactic Influenza Vaccination.—Brown and his collaborators present the data of an epidemic of influenza A which occurred in San Francisco in November and December 1940 and January 1941. They present also the results of prophylactic inoculation against the disease influenza A. Antibody studies

indicated that influenza A was the causative agent in 75 per cent of the many patients so studied. Two hundred and seventy-three of 1,213 persons were given subcutaneous inoculations of the complex influenza A vaccine of Horsfall and Lennette. The group studied consists of the population of the University of California Medical Center in San Francisco. The injections were given on November 26 and 28 and December 3. The epidemic had been in progress a few days before the first inoculations were carried out. There were no significant reactions to the injections. A febrile disease resembling influenza occurred in 235 of the 940 control subjects, an incidence of 25 per cent, as compared to 36 among the 273 inoculated persons, an incidence of 13 per cent. The incidence of influenza was much higher (43 per cent) in the hospital control group (nurses, resident physicians and technicians) than in the general control group, either because of better observation or because of greater exposure. Only cases of established influenza A were considered. Of the inoculated persons who subsequently had influenza, only 4 acquired it more than ten days (eleven, twelve, twenty-three and thirty-nine) after inoculation. The occurrence in 2 of these shows clearly that vaccination did not afford certain protection. The incidence of influenza A in the epidemic reached its peak during the ten days after vaccination, and it subsided rapidly during the time when vaccination might be expected to become effective. However, the difference in incidence in the two groups is striking and may be due to a protective effect of vaccination which began sooner after inoculation than is usually considered likely.

Circulatory Failure in Infections.—Ebert and Stead studied the effect of the following procedures on the circulatory failure of 8 patients with acute infections (1 with lobar pneumonia, 4 with lobar pneumonia and bacteremia, 1 with streptococcal septicemia, 1 with staphylococcal septicemia and 1 with bronchopneumonia): elevation of the foot of the bed, transfusion of whole blood or plasma and infusion of a 10 per cent solution of dextrose in saline. None of these measures produced any improvement in the circulation. Improvement in the circulation occurred only after the infection had been controlled. Data suggest that in circulatory failure in acute infections the entire cardiovascular system is apparently damaged by the infection.

Journal of Nervous and Mental Disease, New York**94:529-668 (Nov.) 1941**

- Myelodysplasia: Two Cases. A. Austregesilo and A. R. de Mello, Rio de Janeiro, Brazil.—p. 529.
 Case of Puerperal Psychosis Recovering from Four Attacks. H. G. Hadley, Washington, D. C.—p. 540.
 Study of Migraine. C. T. Gayley, Lansdowne, Pa.—p. 542.
 Complications and Unusual Phenomena Arising in Course of Metrazol Treatment of Psychoses—Their Classification and Management. J. Epstein, New York.—p. 562.
 Angioma Simplex of Pons. K. T. Neuburger and W. L. Silcott, Denver.—p. 586.
 Recent Progress in Psychosomatic Medicine. J. Nothman, Poughkeepsie, N. Y.—p. 593.

Journal of Neurophysiology, Springfield, Ill.**4:507-582 (Nov.) 1941**

- Alleged Synchronization of Proprioceptive Impulses Within Spinal Ganglions. E. T. von Brucke and Marie Early, Boston.—p. 507.
 Hyperactivity in Monkeys Following Lesions of Frontal Lobes. Margaret A. Kennard, Susan Spencer and G. Fountain Jr., New Haven, Conn.—p. 512.
 Spinal Mechanism of Pyramidal System in Cats. D. P. C. Lloyd, New York.—p. 525.
 Crossed Inhibition of Flexor Reflex in Spinal Mammal. G. P. McCoach, J. Hughes and Winifred B. Stewart, Philadelphia.—p. 547.
 Cortical Origin and Distribution of Corpus Callosum and Anterior Commissure in Monkey (*Macaca Mulatta*). W. S. McCulloch and H. W. Garol, New Haven, Conn.—p. 555.
 Cortical Origin and Distribution of Corpus Callosum and Anterior Commissure in Chimpanzee (*Pan Satyrus*). P. Bailey, H. W. Garol and W. S. McCulloch, New Haven, Conn.—p. 564.
 Potassium and Water Changes in Excised Nerve on Stimulation. A. Arnett, Ithaca, N. Y., and W. S. Wilde, New Orleans.—p. 572.

Maine Medical Association Journal, Portland**32:251-274 (Nov.) 1941**

- Some Practical Aspects of Mental Hygiene. H. B. Elkins, Portland.—p. 251.
 The Cesarean Section Habit. K. A. Laughlin, Portland.—p. 260.
 A Community Hospital Prepares for Emergencies. O. G. Pratt, Portland.—p. 262.

New Orleans Medical and Surgical Journal

94:207-260 (Nov.) 1941

- Therapeutic Problems in Water Balance from Viewpoint of the Surgeon. U. Maes and H. A. Davis, New Orleans.—p. 207.
- Etiology of Influenza: Review. G. W. McCoy, New Orleans.—p. 212.
- Otorhinolaryngologic Aspects of Influenza. H. L. Kearney, New Orleans.—p. 216.
- Treatment of Influenza. O. W. Bethea and R. G. Greenlee, New Orleans.—p. 217.
- Management of Facial Injuries. N. Owens and R. W. Vincent, New Orleans.—p. 221.
- Therapy of Cerebrospinal Fever: Comparative Analysis of Therapeutic Results in Thirty-Seven Cases From Charity Hospital of Louisiana at New Orleans. C. J. Tripoli and R. E. Selser, New Orleans.—p. 232.
- Electro Shock Therapy. W. J. Otis, New Orleans.—p. 239.
- Primary Carcinoma of Liver: Case Report. S. H. Colvin Jr., New Orleans.—p. 242.
- Diagnosis and Treatment of Disorders of Sebaceous Glands (Seborrheic Dermatitis and Acne Vulgaris). B. Kennedy, New Orleans.—p. 243.

Radiology, Syracuse, N. Y.

37:521-658 (Nov.) 1941

- Criteria of Malignancy. A. Graham, Cleveland.—p. 521.
- Tumors of Adrenal and Use of Air Insufflation in Their Diagnosis. G. F. Cahill, New York.—p. 533.
- Use of Intravesical Low Voltage Contact Roentgen Irradiation in Cancer of Bladder. L. S. Goin and E. F. Hoffman, Los Angeles.—p. 545.
- Further Experiences with Chaoul Therapy. E. P. Pendergrass and P. J. Hodes, Philadelphia.—p. 550.
- Roentgen Therapy of 100 Consecutive Tumors of Brain or Spinal Cord. F. B. Mandeville, D. A. Russell and Maude S. Farley, Richmond, Va.—p. 560.
- Malignant Disease of Rectum and Rectosigmoid Treated with Radium. H. H. Bowing and R. E. Fricke, Rochester, Minn.—p. 569.
- Combined Irradiation and Surgery in Treatment of Carcinoma of Pelvic Colon. H. P. Doub, Jean P. Pratt and H. C. Jones, Detroit.—p. 575.
- Achondroplasia Fetalis (Chondrodystrophia Fetalis). E. L. Jenkinson and R. E. Kinzer, Chicago.—p. 581.
- "Reversible" and "Irreversible" Massive Pulmonary Atelectasis: Radiologic Study. C. P. Jacinto and M. Lahoz, Manila, Philippine Islands.—p. 588.
- Recurrent Postoperative Atelectasis. G. L. Apfelbach and J. B. Carter, Chicago.—p. 598.
- Spontaneous Pneumoperitoneum: Roentgenologic Sign Found in Supine Position. L. G. Rigler, Minneapolis.—p. 604.
- Influence of Roentgen Irradiation of Normal Lung on Prevention of Subsequent Metastatic Tumor Growth: Preliminary Report. R. P. Barden, Philadelphia.—p. 608.
- Simplified Method of Preserving Radiographs and Allied Records on Miniature Film. S. S. Sanderson, Binghamton, N. Y.—p. 616.
- Reproduction of Roentgenograms on Films of Millimetric Dimensions and Suggested Potentials of Utility in This Procedure. C. G. Sutherland, Rochester, Minn.—p. 622.
- Protective Screening of Radium During Transportation. L. F. Curtiss, Washington, D. C.—p. 628.

"Reversible" and "Irreversible" Atelectasis.—Jacinto and Lahoz state that serial teleroentgenograms and anteroposterior or lateral tomographic exposures of the chest made it possible to diagnose atelectatic pulmonary consolidation in 4 living subjects. The tomographic exposures were especially useful in differentiating between pleural and pulmonary opacities, which at times appeared the same in the conventional roentgenogram of the chest. The atelectatic pulmonary consolidation in 3 patients was tuberculous, and in 1 it was nontuberculous. In the last patient the presence of the bronchial obstruction was verified by a bronchogram made with the aid of iodized oil and by bronchoscopic examination. Massive pulmonary atelectasis is classified as "reversible" and "irreversible," depending on whether pulmonary reaeration is or is not possible. Massive pulmonary atelectasis in Filipinos, the author says, is not as rare as is currently believed.

Spontaneous Pneumoperitoneum.—Rigler describes a new roentgen sign of pneumoperitoneum. It is manifested in the ordinary scout roentgenogram of the abdomen made with the patient in the supine position. Chiefly the sign consists in the ability to visualize, on the film, the outer as well as the inner wall of the intestine. It appears to occur only when relatively large quantities of gas and some fluid have entered the peritoneal cavity. The sign is not a rare one, as it was present in 5 cases of acute perforation of the colon in which reasonably satisfactory roentgenograms were obtained with the patient in the supine position. Careful examination of the routine roentgenogram may reveal the supervention of perforation and peritonitis, and thus the first evidence that more radical treatment is required will be had.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:497-532 (Oct. 11) 1941

- *Treatment of Bacillary (Flexner) Dysentery with Sulfanilylguanidine. D. E. W. Anderson and R. Cruickshank.—p. 497.
- *Tellurite-Iron-Rosolic Acid Medium Selective for Bacillus Dysenteriae (Flexner). W. J. Wilson and E. M. M. Blair.—p. 501.
- *A New Sulfonamide (Sulfonamide E. O. S.): Its Pharmacology, Chemotherapy and Curative Value in Meningococcal Meningitis. N. Mutch.—p. 503.
- *Size and Visibility of Filtrable or Virus Bodies. A. C. Coles.—p. 507.
- Clinical Manifestations of Tetryl and Trinitrotoluene. J. Hilton and C. N. Swanston.—p. 509.

Sulfanilylguanidine for Flexner Dysentery.—Anderson and Cruickshank assessed the value of sulfanilylguanidine for Flexner dysentery by giving the drug to alternate patients in a hospital for patients with mental disorders in which a severe epidemic began in December 1940 and continued, with intermissions, until June 1941. There were 130 adult patients, but as only those who had blood and mucus in their stools or for whom there was bacteriologic proof that they were suffering from Flexner dysentery were accepted for analysis the number was reduced to 96, of whom 41 were treated with the drug and 55 were untreated controls. The drug, in powder form, was suspended in water or milk. The amount was 9 Gm., given in three doses for two days and followed by the giving of 4 Gm. a day in two doses. If the diarrhea was not controlled within four days the maintenance dose of 4 Gm. a day was continued for one week. A liberal intake of fluid was insisted on during the period of chemotherapy. In a typical case of severe dysentery the patient's condition improved in twenty-four hours after his receiving the drug, and by the third day the patient was feeling much better, the toxic symptoms had disappeared and the appetite had returned. Bowel movements became much less frequent within two days, though blood and mucus often persisted for three to four days. Convalescence was much shorter than in the untreated patient. Treatment with the drug in the acute stage of the infection apparently prevented the convalescent carrier state, which was present in about half of the untreated patients. The use of desoxycholate-citrate agar as a culture medium resulted in the isolation of *Bacterium dysenteriae* (Flexner) from a high proportion of typical and atypical infections. Its superiority over MacConkey's medium was most noticeable in that the pathogen was isolated during convalescence. The combination of sulfanilylguanidine and the culture medium, which readily detects mild infections and convalescent carriers, may be instrumental in eliminating dysentery from hospitals for persons with mental disease. The drug could be used, particularly in wartime, for the control of dysentery.

A Selective Medium for Bacterium Dysenteriae.—Wilson and Blair found that lactose nutrient agar containing, per hundred cubic centimeters, 0.5 cc. of a 1 per cent alcoholic solution of rosolic acid, 0.5 cc. of a 1 per cent solution of potassium tellurite and 1 cc. of a 4 per cent solution of iron alum provided a medium on which Flexner's *Bact. dysenteriae* grew profusely, whereas the growth of most strains of *Escherichia coli* and *Bacillus lactis aerogenes* was inhibited. The growth of *Salmonella* food poisoning organisms, typhoid and paratyphoid bacilli, Sonne's bacillus and cholera vibrios was suppressed.

A New Sulfanilamide Derivative.—Mutch used sulfonamide ethyl-alpha-sulfonate for the treatment of 130 patients with various acute infections. The new drug is freely soluble in water, it is almost tasteless and infants and patients in coma or those who are vomiting or have diarrhea can be easily treated by giving the drug by mouth, nasal tube, rectal tube or intravenous drip. General malaise was slight, and pallor, nausea and vomiting never occurred. Cyanosis was common, but it never caused distress or required the discontinuance of therapy. Routine blood counts were made but granulocytopenia or simple leukopenia was not encountered. Minor degrees of anemia were observed, but not with greater frequency or

severity than is usual after a severe infective illness. A simple erythematous rash developed in a child after a week of treatment. The rash might possibly have been prevented by a freer use of alkalis. In general there were no serious complications, and the usual symptoms which distress without endangering the patient when sulfapyridine is used were absent. As the expected recovery rate in the disorders treated is reasonably high even with nonspecific therapy a datum line from which to judge the success of the new drug is difficult, and therefore the author stresses the results obtained in 34 cases of acute epidemic cerebrospinal meningitis. Three of the patients died, but there were no deaths among those who were seen during the first week of illness and who remained free of serious secondary infections of the viscera. The temperature of some patients was normal after thirty-six hours of treatment. The recovery of some patients was complete in as little as two and a half weeks.

Size and Visibility of Filtrable Bodies.—Coles believes that all the filtrable virus bodies, including that of foot and mouth disease and infantile paralysis, are easily within the range of the ordinary microscope when it is used correctly. Ultramicroscopic methods have so far added little to the knowledge of viruses. He has used Nelson's method of measuring by extinction for many years. He has found a Leitz 1/10a fluorite objective fitted with an iris diaphragm graduated in numerical apertures, immediately behind the back lens, remarkably accurate. Briefly, the method is to bring the object just to the point of invisibility by reducing the numerical aperture, and then the correction for antipoint will be the measure of the object. The minimal visibility of any objective can be determined by the following calculation: For white light of 45,300 waves per inch (2.4 cm.) 1,041 is divided by the numerical aperture; for green light of 50,000 waves per inch 0.942 is divided by the numerical aperture of the objective.

Mitt. a. d. med. Akad. zu Kioto, Kyoto
32:451-866 (June) 1941. Partial Index

*Pathologic Changes in Bones Due to Peanut Feeding. I. Kohno.—p. 748.

Osteopathy Due to Peanut Feeding.—Kohno fed a litter of 8 rabbits and 2 control rabbits with raw ground peanuts daily in amounts varying from 1 to 5 Gm. per kilogram of body weight, the experimental feeding starting as soon as the young animals were weaned. Six animals died of gastrointestinal disturbances at intervals ranging from twenty-three to fifty-three days, only 3 animals surviving sixty-two days, at which time they were killed. Histologic examination of the bones in these animals revealed severe hyperplasia of the intermediary cartilage zones, abnormal prolongation of the cartilage matrix and diminution of the total length of the bones. The cortex of the tubular bones was greatly reduced in thickness and of a spongy consistency, with the external and internal periosteal tissues greatly thickened. The bone marrow generally showed fibrotic changes which produced a shortening of the bones corresponding with the degree of the osteopathy. These changes of bone resembled in part those seen in alimentary osteopathy produced by alkalosis; but they more closely resembled the changes of alimentary osteopathy encountered in acidosis. These observations led the authors to conclude that together these changes represent a new distinct osteopathy due to peanut feeding.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia
81:1629-1676 (Aug. 5) 1941

*Alarming Frequency of Venereal Diseases and Necessity of Social Hygienic Measures to Reduce it in Netherland East Indies. R. D. G. P. Simons.—p. 1630.

*Skin Disorders Caused by Sunlight. P. H. J. Lampe.—p. 1639.
*Lead Encephalopathy in a Chinese Infant. Loc Ping Kian.—p. 1667.
*Simple Method for Blood Transfusion. H. Oosterveen.—p. 1673.

Venereal Diseases in East Indies.—Simons estimates that in Java (and Madoera) from 10 to 15 per cent of the population of the age level between 18 and 50 are infected with venereal disease. He thinks that the high frequency is chiefly due to the fact that 50 per cent of the patients with venereal disease undergo no treatment at all. The country is overrun with quackery. "Wonder doctors" publish the slogan that "native

ailments" must be treated with native herbs. Only a few hospitals perform serologic examinations during pregnancy. There is no follow-up study and no partner treatment. Brothels flourish in the cities. Investigation of the houses of prostitution only makes the prostitutes flee to their villages. Lack of social hygiene methods and lack of proper instruction have the effect that 75 per cent of the patients who submit to first treatment do not continue until complete recovery.

Skin Disorders Caused by Sunlight.—Lampe applies the term phototrauma to lesions produced by excessive irradiation on a skin of normal sensitivity. Examples of phototrauma are sun erythema, sunburn, epelides and reticular pigmentations. It is difficult to differentiate strictly between a physiologic and a pathologic sensitivity of the skin, but if the threshold value is greatly reduced the sensitivity is usually regarded as pathologic. This reduction in the threshold may be due to the photosensitizing effect of substances which under ordinary conditions are not present in the same quantities or do not behave in the same manner. The author subdivides the photosensitivity dermatoses into photoallergic skin reactions and photodynamic manifestations. The photoallergic reactions are best known in the temperate regions, where in some persons the allergy recurs every year with the onset of the sunny season. The terms urticaria solaris, eczema solare and prurigo aestivalis indicate the polymorphic and seasonal character. In the tropics these lesions are rare, because persons with a predisposition to them are unsuited to the tropics. Under incidental photoallergic reactions the author mentions those that are not connected with a previous exposure to light; that is, the diagnosis of allergy to light is based chiefly on the fact that the allergic manifestations occur on the uncovered skin. In this connection the author mentions allergic manifestation in connection with hair dyeing and alimentary photoallergy. In the photodynamic manifestations the photosensitizing substance may be naturally present, as is porphyrin. On exposure of the sensitive person to sunlight, hydroa vacciniforme and hematorporphyrinuria develop. Another disease entity ascribed to a congenital photodynamic hypersensitivity is xeroderma pigmentosum. The photosensitizing substance can also enter the organism artificially, for instance in the form of a medicine, or it may come in external contact with the skin. In this connection the author mentions the photosensitizing effect of the eau de cologne of certain perfumes, benzine, brandy, spirit and sea water. The local forms of light dermatitis are characterized by a temporary erythema and a subsequent persistent pigmentation. The form of the light effect usually indicates previous contact with a sensitizing substance in a fluid state (light dermatitis "en coulée" or light dermatitis "en brelogue"). The author reviews several case histories to illustrate the various skin disorders produced by sunlight.

81:1839-1892 (Sept. 2) 1941. Partial Index

*Polybacteriophage in Treatment of Bacillary Dysentery. J. Soesman.—p. 1863.

*Papillomatous Skin Proliferations in Genitoanal Region Caused by Amebas. R. Goenawan.—p. 1875.

Polybacteriophage in Treatment of Bacillary Dysentery.—Soesman reports 50 cases of bacillary dysentery in which he employed polyvalent bacteriophage; 17 of the patients were adults and 33 were children. The polyvalent bacteriophage was administered by mouth. The case histories indicate that the adults usually were given six times daily one ampule of 2 cc. for two days. In some patients this produced cure, but in others the bacteriophage treatment was continued for a number of days with three or less ampules. Children received in the beginning usually three ampules daily and later one ampule, but some were given larger doses. All the patients recovered, and in most of them the severe symptoms disappeared rapidly. The author concludes that polyvalent bacteriophage is a valuable asset in the therapeutic armamentarium against acute bacillary intestinal infections.

Genitoanal Proliferations Caused by Amebas.—Goenawan describes 3 cases of papillomatous proliferations in the genitoanal region. Examination disclosed the presence of *Entamoeba histolytica*, and treatment with emetine was instituted. This proved effective after previous symptomatic treatment had failed.

THE STUDENT SECTION

of the

Journal of the American Medical Association

Devoted to the Educational Interests and Welfare of Medical Students, Interns and Residents in Hospitals

SATURDAY, JANUARY 24, 1942

Individuality and Science

Methods of education have been severely criticized for mass regulations which fail to take adequate account of individual excellences. Pedagogy has been called a racket, a pressure group which has forced legislation more in the interest of the pedagogical profession than in the interest of the individual students. Schools of education are accused of padding their curriculum in an attempt to compete in standing with other disciplines, and doctorates in education are considered inferior to those in other departments. Some of the criticisms are undoubtedly due to the difficulties inherent in the study of any subject in which the variables are difficult to control. Similar criticisms come from the so-called exact sciences, mathematics, physics and chemistry, against the difficult, less exact biologic sciences botany and zoology, and some would even deny the name of science to those most difficult studies of man's social behavior. For years the educational world has been struggling with the problem of how best to deal with the increasingly recognized differences in mental ability, differences which, like those we have found in taste reactions, are of two kinds: a difference between general marked ability and general mediocrity and a difference between ability in certain lines such as mathematics, science, art or literature.

I wrote to the sixteen living past presidents of our association and asked if they could satisfy the enclosed New York State requirements for teaching in the state secondary schools. Not one of the past presidents of the American Association for the Advancement of Science would be allowed to teach science in a New York high school without further preparation, since none had taken the required instruction, which included such subjects as the psychology, history, philosophy, principles and practice of education. One past president remarked that not all presidents would have been good secondary school teachers. It is a fact, however,

that more than a fourth have had secondary school teaching experience but could not now qualify under present requirements. This is not at the present time a serious deprivation of the freedom of these men, but some believe that the state methods of selecting teachers place undue emphasis on relatively unimportant requirements. Some educators have told us that in the balance between method and subject matter they believed the pendulum had swung too far toward method.

Uniform laws throughout the states would have certain advantages, but they might not be equally well adjusted to local environments and might prevent profitable experiments in local government. The increased means of communication throughout the world appear a mixed blessing. They tend to standardize our thoughts and behavior in a common mold but at the same time to decrease the material expressions of individuality available for social evolution through natural selection.

Opposition to totalitarianism is not merely because it attacks man's rights but also because it suppresses his personality. Individuality is the kernel of democracy, the biologic basis of the struggle for freedom. When we fight for individuality we fight on the side of nature. Recognition of individuality and all that it implies especially concerns us as scientists. Even if science should be again persecuted and driven under cover, as it was in the middle ages, there would still be some brave inquiring minds. But science cannot flourish without freedom of thought and its expression.

APPLICATIONS OF SCIENCE

Science is under fire for the suffering brought about by its applications. Science is in no position to disavow its responsibilities in the problems of peace and war. As in epidemics of disease due to the ignorance of medicine we need not less but more medical knowledge, so in seeking a cure for the scourge of war we need not less but more science. The remedy we trust may ultimately be found by that most difficult of all biologic sciences the study of

Condensation of a portion of the address of Albert Francis Blakeslee, Director of the Carnegie Station for Experimental Evolution, Cold Spring Harbor, L. I., retiring president of the American Association for the Advancement of Science, published in Science, Jan 2, 1942

motives and human behavior. Science can reply to its critics that the applications of science are merely tools which men with good or bad motives use for their good or evil ends. The same can be said of printing. Even if we admit the responsibility of science for deaths due to its applications we shall find that its applications have brought about even greater savings of life. The legend to a reproduction of the title page of Jenner's paper on vaccination published in 1798 reads "The application of the facts presented in this paper has probably saved more lives than the total of all lives lost in war." The statement is easy to believe, since it has been estimated by Haggard that in the hundred years preceding Jenner's paper sixty million people in Europe died of smallpox.

In war itself science has not been alone destructive, as may be seen from figures supplied by the Surgeon General's Office regarding the annual death rate per thousand in the United States Army for the Mexican War, the Civil War and the first World War. Deaths due to battle injuries increased from 15 per thousand for the Mexican War through 33 for the Civil War to 53 for the World War. The death rate due to disease, however, decreased from 110 through 65 to 19 for the World War. The net result is that the total death rate actually declined, from 125 in the Mexican War through 98 in the Civil War to 72 per thousand in the World War. It is a satisfaction to feel that, though implements of war have increased in destructiveness, those who are fighting to preserve our free way of life may not be subjected to greater risks than our forefathers assumed when they too fought for their country.

GIFTS OF SCIENCE TO MAN

It is not man's material comforts or even the alleviation of his physical pains which are the greatest gifts of science to mankind. Science has freed men's minds. Foremost among liberating ideas is the belief that there is order and law in the universe and that this order can be discovered by questioning nature itself. Such belief was rare in the middle ages, when processes of nature were generally attributed to supernatural causes. The Copernican theory widened our physical horizons and showed our earth a tiny speck in a universe of worlds. The theory of evolution brought a unity to our ideas of the organic world. The discovery of the mechanism of inheritance allowed an evaluation of the contributions of heredity and environment to the personality of individuals. The experimental method with adequate controls is the most valuable tool science has yet developed. Its understanding and use in daily life would mean more than all the scientific facts that schools can teach.

Science has helped to free man's soul. It has broadened the horizons of religion and given it a new point of view away from the old intolerant, materialistic theology when men sought their own salvation from selfish hope of heaven or fear of hell and persecuted or even killed those who did not conform to the authority of orthodox beliefs. Elimination of such encumbrances has left to religion a freer field for the cultivation of its great spiritual values. In this shrunken world all mankind are neighbors and our benefactions have had a world-wide view.

Science has banished much of ignorance and superstition, but much remains. Recently in a New York railway station I purchased seven different magazines on astrology. One of them, and this not the best seller according to my newsdealer, I found had a monthly paid circulation of more than a hundred and thirty-two thousand copies. The circulation of our journal *Science* is about fifteen thousand. The readers of these astrological journals are part of our democracy and help to form the policies of our government. Other examples need not be given to show that the scientific method has not yet saturated our land.

If we consider past efforts to better mankind, it is clear that good intentions are untrustworthy criteria of service to humanity. The Biblical criterion "By their fruits ye shall know them" is biologically sound doctrine and still the best test. The attempts to suppress independent thought and study of nature in the middle ages and up to the not distant past in our own country were inspired by noble motives, but they put civilization back by many centuries. The crusaders had a lofty purpose but a trivial objective: the capture of an empty tomb, with all too slight appreciation of the teachings of Him whom the tomb had held. The net result was unnecessary suffering and death even among a group of children who became involved.

VALUE OF SCIENTIFIC STUDY

During the plague of the seventeenth century when a fourth of the population of Europe died of this disease there were doubtless, as there should have been, hospitals and other organized efforts to minister to the sick. We can imagine the scant attention that would have been then paid a request for a grant for a scientific study of the life habits of such creatures as rats, fleas and the wriggling animalcules which Leeuwenhoek discovered at about this time in drops of putrid water. And yet our knowledge of rats, fleas and bacteria is one reason why centuries later pest hospitals are not found in London and we no longer dread the plague. The illustration given is an example of the unsuspected value of knowledge in apparently unrelated fields. Many other examples could be given of

the service of science to human welfare, a service which is often indirect. The ancients used human sacrifices to ensure bountiful harvests. Now we use commercial fertilizers for this purpose and find them more efficient. In the old days people fought yellow fever and smallpox by church rites and religious processions. Now we fight these diseases by killing mosquitoes and by vaccination. Formerly thousands of people were executed on the ground that they were witches. Science has proved that witchcraft does not exist.

Think where we would have been now if in the dark ages men like Copernicus, Galileo, Albertus Magnus, Roger and Francis Bacon among other inquiring minds had been able to carry on their scientific investigations in an atmosphere of intellectual freedom. Our most difficult sciences might now have reached the stage occupied by biology, for example, and we might already have found a remedy for our present sick civilization.

THE FIGHT FOR INDIVIDUALITY AND FREEDOM

Science in common with all intellectual pursuits needs tolerance, freedom from restraint and a recognition of the value of individuality. Men differ widely in their capacities for research. A great need therefore in the advancement of science, as of other intellectual endeavors, is to devise means for discovering the exceptional abilities at an early age and giving such abilities exceptional opportunities in order

that their span of effective service with its social values may be prolonged.

The public, whom science serves, knows too little what science really means. The magic and gadgetry of scientific applications rather than the methods and ideals of science make the great appeal. And yet the ideals and methods would help society reach judgments on the basis of ascertained facts rather than through emotional appeal and personal profit and would transform our daily lives if universally applied. Think what a change would come if our representatives in legislative halls should open each session with the prayer of Huxley "God give me strength to face a fact though it slay me" and really mean it.

In the promotion of human welfare through the advancement of science, scientists and the public have a common interest and may have a common share. Although each of us lives in a different and more or less separate world of his own, I trust that we shall ultimately be able to acquire a social organization as orderly as the constellations of other worlds. In our fight for individuality and freedom in this war and in the peace to come, I do not despair. The experimental method has demonstrated that we must use force without stint to show that freedom and political morality as well as personal honesty really pay. We still cherish the faith that the free search for truth by the methods of science has power to rebuild the world and will prevail.

The First Epidemic of Syphilis

In 1494 Charles VIII of France invaded Italy to make good his claims to the throne of Naples. Italy, weakened by luxury and the rivalries of her numerous states, was able to make no effective resistance, and the progress through the peninsula of Charles's army, composed of mercenaries from all parts of western Europe, was more a triumphal march of debauchery than a serious military campaign. Charles captured Naples on Feb. 22, 1495, and prepared for its permanent occupation. But dissipation and disease did what the Italians could not; a plague attacked his troops which compelled the evacuation of the city, and in the spring of 1495 the army was in undisciplined retreat from Italy. Ultimately the various disorganized troops scattered over Europe and returned to their own countries, carrying with them the new disease which thirty-five years later became known as syphilis. This was the historical beginning of syphilis. . . .

The spread of the disease can be traced in chronological sequence not only through Europe but through all the parts of the world which came in contact with Europe. The Portu-

guese soon carried it to Africa and the orient. Researches of Okamura and Susuki for Japan and China, and of Jolly and others for India, show the introduction of syphilis into these countries only after contact with Europe. . . .

The East Indian, Chinese and Japanese languages had no native names for the disease, and, like the Europeans, the orientals gave it names indicating its foreign origin. In India the disease was first recognized in 1498, after the arrival of Vasco da Gama, who had left Portugal in 1497. It appeared in Canton, China, in 1505, after the visit of Europeans. It was not recognized in Japan until 1569, when its appearance at Nagasaki was attributed to Chinese or Portuguese sailors.

There is thus an accurate historical record of the startling spread of syphilis over the known world in a few years after 1494; for this disease no name existed, and a new one invariably had to be invented. No similar record exists of the sudden establishment of any other great disease among the larger part of the earth's inhabitants.

From the History and Epidemiology of Syphilis, by William Allen Pusey, Charles C. Thomas, Springfield, Ill., Publisher, 1933.

HOUSE OF
OF THE MEDICAL

Correspondence

FAMOUS EXPLORERS

To the Editor:—On page 2287 (Dec. 27, 1941) among other questions relating to pioneer physicians you ask "Do you know what physician was a famous explorer?" The answer given on page 2290 is David Livingstone (1813-1873), the fearless Scottish medical missionary.

Livingstone arrived at his first missionary station on July 31, 1841 and remained a missionary at Mabotsa until 1846. With his family he traveled to several places investigating sites for missionary work and was undoubtedly the first white man to reach Lake Ngami, Aug. 1, 1849. His work as an explorer really began on June 8, 1852, when he parted from his family and left Cape Town, still in the service of the London Missionary Society, and he continued this connection with this society until 1857. The Zambezi expedition "for exploring eastern and central Africa," of which he was commander, left Liverpool March 10, 1858, a year after the death of Dr. Elisha Kent Kane, one time of the Medical Corps of the U. S. Navy, whom I consider an equally famous, though American physician, explorer.

Elisha Kent Kane (1820-1857), born at Philadelphia, was graduated in medicine from the University of Virginia in 1842. He entered the Medical Corps of the U. S. Navy in 1843. His first cruise took him to

the China station, and en route he explored the country from Rio de Janeiro to the base of the Andes. He visited India, traveling from Bombay to Ceylon. On the arrival of his ship in China he provided a substitute and started for Luzon in the Philippine Islands. Returning home in 1844 he traveled via India, Persia, Syria, Egypt, Greece, Austria, Germany and Switzerland, reaching the United States in 1846. In 1847 he was with the expedition to Mexico. In 1850 he was surgeon to the first Grinnell expedition to the arctic regions to search for Sir John Franklin. This expedition failed to find Franklin, though Kane wrote a book, published in 1854, describing the search. The second Grinnell expedition sailed in June 1853 with Dr. Kane in command. He sailed through Smith Sound to the sea now known as Kane Basin, thus establishing the route for several future arctic expeditions. This expedition spent two winters in the arctic regions, finally abandoning the ship, and after great hardships reached Upernivik, Aug. 5, 1855. The highest point north was latitude 80° 35' (June 1854). In recognition of his services as an explorer, Kane received the Founder's Medal of the Royal Geographical Society, a gold medal from the Paris Geographical Society and a medal from the Congress of the United States. He died at Havana, Cuba, Feb. 16, 1857.

RICHMOND C. HOLCOMB, M.D., Upper Darby, Pa.
Captain, M. C., U. S. Navy, retired.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items for consideration for publication in the Student Section.

Students and Interns Pledge of Allegiance

At the joint national convention of the Association of Medical Students and the Interne Council of America in Chicago, December 27-29, the delegates signed a pledge of allegiance to the government of the nation, which reads as follows:

A PLEDGE OF ALLEGIANCE

TO THE PRESIDENT OF THE UNITED STATES, COMMANDER IN CHIEF OF OUR ARMED FORCES

The American people are at war, compelled to take up arms in self defense against Axis aggression. Together with all free nations and freedom loving people, we are fighting to maintain our right to live among our world neighbors in freedom and in common decency, without fear of assault.

In this grave hour, Mr. President, we pledge to you, and through you to our government and nation, our allegiance. We pledge that we shall not be found wanting in our readiness to give everything, our energy, skill and lives, to carry through all the duties we are called to perform in assuring victory to our just cause in this war.

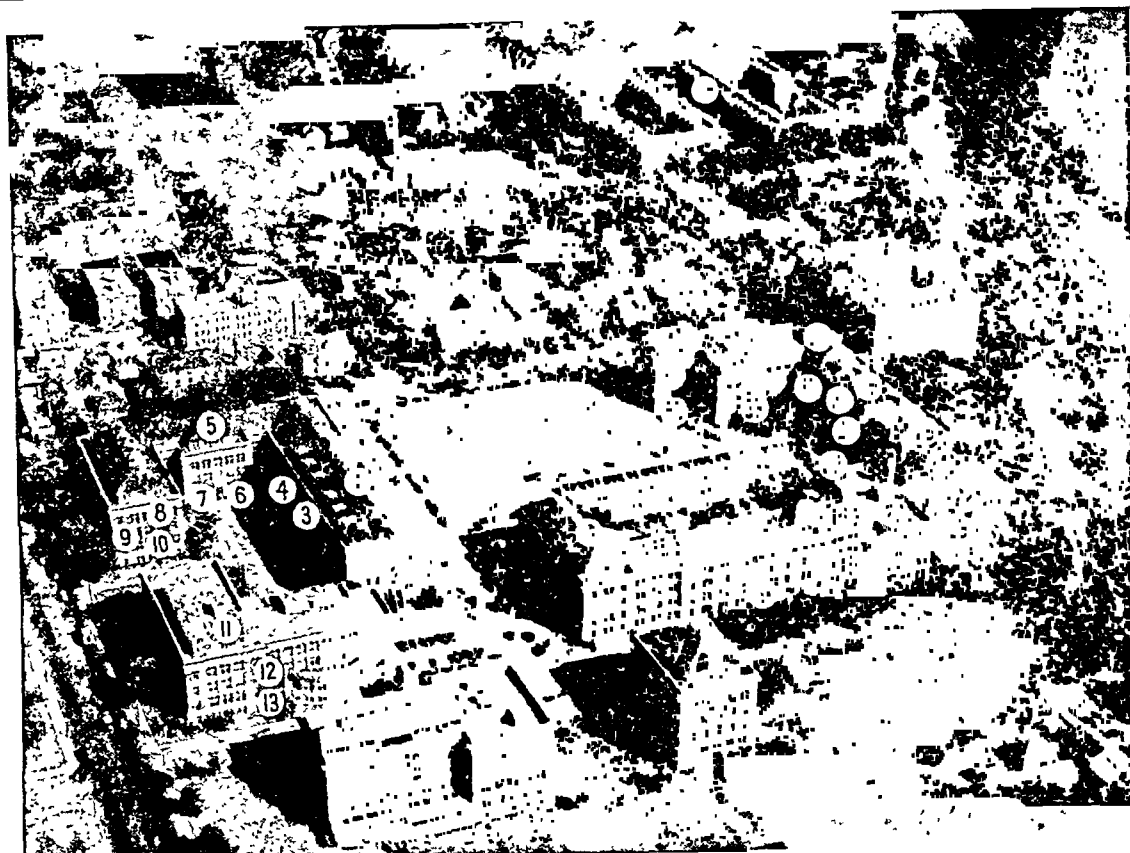
WE MEDICAL STUDENTS AND INTERNS PLEDGE TO YOU, MR. PRESIDENT:

1. To take our place, side by side with the rest of the American people, in the armed forces of our country; to enlist at once in the medical corps and Medical Reserve Corps of the United States Army and Navy.
2. To prepare ourselves for military service by premilitary training.
3. To work longer and harder at the task for which we are best fitted; to equip ourselves completely for the job that lies ahead; to support and assist our government and deans in the task of putting our schools and curriculum on a war footing.
4. To give our services in the defense of the civilian population of our country; to help the American Red Cross train our people in first aid; to strengthen the casualty squads in our hospitals.

The individual signed pledges were presented to Dr. Morris Fishbein, editor of THE JOURNAL, with a request that they be forwarded to the President of the United States. Dr. Fishbein has forwarded the signed pledges to Major Sam F. Seeley, executive officer of the Procurement and Assignment Service, Washington, D. C., for transmission through the proper channels to the President.

Check on Eating Habits of Students

Wayne University, Detroit, has appointed a faculty committee on nutrition to instruct students in the dietary necessities of health during the emergency. The chairman is Vaughn S. Blanchard, M.S., head of the department of health and physical education, and the members are Mrs. Jean Tripp, president of the Detroit Dietetic Association, and the following Wayne faculty members: Frances B. Sanderson and Lillian Meyer of the home economics department; Dr. Arthur H. Smith of the College of Medicine; Dr. Irvin Sander, director of the Student Health Service; Counselor Doris Cline, Ph.D., of the Division of Student Personnel; Dr. Frank Oktavec, professor of health education, and Lillian Wakefield, cafeteria manager. The committee has made an extensive check of the daily trays in the university cafeteria to determine the nutritive value of meals selected. The data found in this study will be the basis of displays in the corridors showing luncheons that are nutritionally good and those that are bad; other work is in progress to help students arrange next semester's class schedules with an eye to regular and adequate lunch periods.



UNIVERSITY OF MINNESOTA MEDICAL CAMPUS, 1941

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| 1. Medical Sciences Building. | 10. Pharmacology. | 20. Eustis Hospital. | 31. Neurosurgery. |
| 2. College of Dentistry. | 11. Institute of Anatomy. | 21. Pediatrics. | 32. Cancer Institute. |
| 3. School of Medicine. | 12. Anatomy. | 22. Diagnostic Roentgenology. | 33. Radiation Therapy. |
| 4. School of Nursing. | 13. Pathology. | 23. Dermatology. | 34. Todd Memorial Hospital. |
| 5. Millard Hall. | 14. Students' Health Service. | 24. Urology. | 35. Internal Medicine. |
| 6. Preventive Medicine and Public Health. | 15. Interns' Quarters. | 25. Anesthesiology. | 36. Ophthalmology and Otolaryngology. |
| 7. Department of Medicine. | 16. Child Psychiatry. | 26. Elliot Memorial Hospital. | 37. Louise M. Powell Hall for Nurses. |
| 8. Physiology. | 17. Obstetrics and Gynecology. | 27. Laboratory Service. | 38. Pioneer Hall for Men. |
| 9. Bacteriology and Immunology. | 18. Orthopedic Surgery. | 28. Hospital Administration. | 39. Botany. |
| | 19. Outpatient Department. | 29. Psychopathic Unit. | 40. Zoology. |
| | | 30. Surgery. | |

University of Minnesota Medical School

Clinical teaching at the University of Minnesota Medical School, Minneapolis, is done primarily in the University Hospitals and outpatient department and the Minneapolis General Hospital. Some clinics are held in the eight hundred and sixty-seven bed Ancker Hospital and the two hundred and fifty bed Gillette State Hospital for Crippled Children in St. Paul. Certain elective clinics are held also at the Southtown Clinic, the Shriner's Hospital for Crippled Children, the Salvation Army Home and various settlement houses and centers in Minneapolis and the Wilder Dispensary in St. Paul.

The facilities of the medical school limit the number of students to about one hundred freshmen each year, selected by an admissions committee, native residents of Minnesota being given first preference, while second preference is given to applicants from the North Central states. Applicants from other sections are accepted only for special reasons, the most common being that they are outstanding students and sons and daughters of alumni of the University of Minnesota.

The present requirements for admission are three years of college work and courses in physical chemistry, psychology, genetics and eugenics, in addition to the science courses required previous to 1939, at which time the new requirements for admission went into effect. The University Hospitals include under one roof the Elliot and Todd Memorial hospitals, the

Memorial Cancer Institute, the Eustis Children's Hospital, the Psychopathic Unit and the Students' Health Service, providing a total capacity of four hundred and eighty beds and thirty bassinets and a general outpatient department caring for nearly 400 patients a day.

The medical school is conducted on the four quarter system, but freshmen are received only at the opening of the fall and winter quarter. The school was organized in 1883 as the University of Minnesota College of Medicine and Surgery, at which time its only function was to conduct examinations for the degrees of M.B. and M.D. With the absorption of the St. Paul Medical College and the Minnesota Hospital College in 1888, it was reorganized and a class has graduated each year since 1889. In 1908 the Minneapolis College of Physicians and Surgeons was absorbed, and in 1909 the University of Minnesota College of Homeopathic Medicine and Surgery. The present title of the school was assumed in 1913. In 1914 a committee was appointed by the administrative board to consider the possible relationship of the Mayo Clinic to the medical school, but it was not until the following year that the Board of Regents effected an affiliation, not with the medical school direct, but with the graduate school of medicine. Two years later this temporary affiliation was replaced by permanent union, with transfer to the university of the endowment fund so generously provided by Drs. William J. and Charles H. Mayo for the

support of the Mayo Foundation. The graduate school of medicine offers opportunity for study and research in the medical school in Minneapolis and in the Mayo Foundation for medical education and research at Rochester, Minn. The University of Minnesota Medical School, in cooperation with the Mayo Foundation, has pioneered in graduate medical education. The number of graduate students has increased until there are about six hundred registered for major and minor work in the medical sciences, a number so large that it is causing problems of facilities and staff. From 1915 to 1938 the state legislature appropriated \$25,000 annually for medical research, which was allocated to faculty members for research projects by the dean of the graduate school on recommendation of the medical graduate committee.

In 1938, with a grant from the Commonwealth Fund of New York, a department of postgraduate medical education under the directorship of Dr. William A. O'Brien was created. The Center for Continuation Study in connection with this department affords practicing physicians an opportunity to attend organized courses. During the current and the next two years the Commonwealth Fund will supply \$8,000, \$6,000 and \$3,000 for the continuation of this program.

Recently the Minnesota Medical Foundation has been incorporated not for profit for the purpose of promoting the welfare of the community by the cooperation of alumni and friends of the medical school in improving the undergraduate, graduate and research functions of the university; to establish scholarships, lectureships, professorships, research and student loan funds and in general to advance the interests of the medical school and its alumni. This foundation gets its funds from gifts of patrons and members, from bequests and donations, and from membership dues. Its membership includes not only alumni but laymen interested in the progress and standards of medical service in this area.

Medical Students' Association and Intern Council Merge

At a joint meeting of the Association of Medical Students and the Intern Council of America in Chicago, December 27-29, the two organizations decided to merge into a new joint organization which will be called the Association of Internes and Medical Students. The objects of the new organization as stated in its constitution are to "concern itself with the ethical, social, humanistic and educational aspects of medicine in order that its members may be better equipped to serve themselves, their profession and society." The president of the joint organization is Thomas L. Perry Jr. of Harvard Medical School, who last year was president of the Association of Medical Students. The membership of the Association of Internes and Medical Students now amounts to about six thousand. The general theme of the annual meeting was "Health and Defense of the Nation." The delegates discussed ways of implementing the national effort. At the panel on medical education it was urged that the medical curriculum and internship be streamlined to meet the urgent need for physicians, that courses in military medicine be included in the curriculum and that the present high standards of medical education be maintained. Other discussions concerned the housing, food, health, recreational and financial problems of medical students and interns, the training of medical students and interns in first aid for service in the civilian defense program, the organization of hospitals into catastrophe squads and mobile hospital units, and cooperation of the armed forces. Among the speakers at various sessions in addition to those mentioned in the Student Section, Dec. 27, 1941, were

Col. Charles G. Hutter, M. C., U. S. Army, liaison officer of the Army to the American Medical Association; Commander Mott of the Navy Medical Corps; Dr. Victor E. Johnson, dean of the medical students of the University of Chicago; Dr. Alfred Korach of the University of Cincinnati College of Medicine; Dr. Herman Bundesen, president of the Chicago Board of Health; Dr. Arthur C. Bachmeyer of the Association of American Medical Colleges; Dr. William D. Cutler, secretary of the Council on Medical Education and Hospitals, and at the banquet Mr. Chang Lok-Chen, Chinese Consul-General of Chicago; Mr. R. W. MacKay, who represented the British Embassy and Mr. D. I. Zaikin, Russian vice consul of New York City.

Northwestern

A Student Medical Society comprising all the students of Northwestern University Medical School, Chicago, is being organized with the first of this year. Under the sponsorship of the student-elected Pi Kappa Epsilon honorary fraternity, four meetings will be held each quarter. By the organization of a medical society it is conceivable that medical students may derive considerable benefit from actual participation in the activities of their own society. Because of the almost universal practice by members of the profession of meeting in groups to exchange information, training in the art of expressing the results of clinical or scientific study may well be included in the education of a medical student. The first meeting will be made up of nine talks on three general subjects by students interested in particular features of each.

Northwestern now has a department of visual education, substantially endowed and called the Laura Shedd Schweppe and Charles H. Schweppe Fund for Visual Education. The objective of this Fund is to create a library of moving picture films for use in the classroom or meetings as an additional aid to student training. The endowment provides also that films on any medical subject may be purchased, and it will cover the expenses of films made by members of the Northwestern faculty. These films will be organized and planned as to subject matter by a committee composed of the dean, two departmental heads and two senior medical students. The ideal film will be composed of several 100 foot individual reels relating to one medical problem, one reel being devoted each to the anatomic, physiologic, pathologic, medical and surgical aspect of the problem. A trained animator is available to clarify the presentation of the subject matter through the medium of animated diagrams and figures.

Military Service and the Physiology Department at Washington University

Three members of the staff of the physiology department of Washington University School of Medicine, St. Louis, having been called to active military service, Drs. Joseph Erlanger and Arthur S. Gilson of the departmental staff were assisted in the course of lectures in physiology, just completed by the following distinguished physiologists from other schools: Dr. Anton J. Carlson of the University of Chicago, who lectured on endocrine and gastrointestinal physiology; Dr. Carl J. Wiggers of Western Reserve University School of Medicine, Cleveland, on the physiology of the vascular system, and Dr. Robert Gesell of the University of Michigan Medical School, Ann Arbor, on respiration. Dr. Thomas P. Findley Jr. of the department of medicine lectured on renal function.

A special lecture was delivered before the student body and faculty, December 3, by Dr. William Boyd, professor of pathology and bacteriology at the University of Toronto Faculty of Medicine, whose sub-

ject was "Increasing Incidence of Disease, with Special Reference to Carcinoma of the Lung."

The junior class was given the first of two comprehensive examinations, December 6, designed to cover the two years of preclinical work; the other comprehensive examination to cover the first three years' work will be given in the spring.

A capacious student lounge and reading room was opened in December.

Four Boston Schools Go on Twelve Month Basis

As a war emergency measure, Boston University School of Medicine, Harvard Medical School, Tufts College Medical School and the new Harvard School of Dental Medicine announced, Dec. 29, 1941, in a joint statement that beginning on July 1, 1942 they will go on a twelve month basis. The new program of continuous operation will do away with the present summer vacation and will shorten the period of medical training to three calendar years instead of four. Graduates of the new Harvard School of Dental Medicine will qualify in four and one-half years instead of five, as originally planned. No change in the total amount of required work is contemplated in any of the institutions involved, and there is no intention to lower the standards of education in these important fields. This change is a part of the general emergency program being installed throughout Harvard University, Tufts College and Boston University to accelerate the education and training of students who may be called into service.

Military Preparedness Symposium for Medical Students

An all day symposium on military medicine, chiefly for the benefit of the third and fourth year students at the Long Island College of Medicine, Brooklyn, held on December 3, was designed to stimulate applications among the two classes of medical students for commissions in the medical administrative corps; also to give them a survey of factors involved in various branches of military medical service. Among the speakers were Capt. Dickinson S. Pepper, M.C., U. S. Army, now at Walter Reed General Hospital, Washington, D. C.; Rear Admiral Charles M. Oman, U. S. Naval Medical Center, Washington, D. C.; Capt. Paul M. Albright, in charge of personnel in the reserve section of the Bureau of Medicine and Surgery of the Navy, Washington, D. C.; Lieut. John K. Hawes, examiner on the Naval Aviation Cadet Board, Floyd Bennett Field, and Dr. Philip D. Wilson, chief surgeon of the Hospital for Ruptured and Crippled.

New York City Hospitals Modify Internships

Dr. Willard C. Rappleye, commissioner of hospitals, announced, January 11, that in view of the urgent needs of the Army and Navy the municipal hospitals of New York will modify their internships to a one year period of training in order to assist in the recruitment of medical officers for the armed services. The general plan contemplates that the basic internship will be one year. Those who complete that service and are not eligible for a commission, because of physical defects or other reasons, may remain as residents either in the general services or in a special service.

The commissioner also stated that a certain number of residents will probably be permitted to continue their advanced training in special fields of medicine in order to insure a sufficient supply of specialists for the armed services and for civilian needs in the future.

The Department of Hospitals and its advisory council are advising that all interns and residents eligible for military duty be urged to apply for a commission in the Medical Corps of the Army or the Naval Medical Corps Reserve. Under the rules of the Selective Ser-

vice System, the local boards ordinarily will not defer interns beyond twelve months of hospital training. Residents and interns who do not apply for commissions will automatically come under the provisions of the Selective Service System and their cases will be disposed of in the usual manner by local boards.

Under the new program of the Procurement and Assignment Service, advisory committees will be set up in each corps area of the United States to assist in the recruitment of medical personnel for the various government services and also to select residents and others for advanced training in special fields or to help protect essential hospital services in the local communities. On these advisory committees are representatives of the hospitals, medical schools and the medical, dental and veterinary professions.

Professor of Anatomy to Retire at Washington University

Dr. R. J. Terry will retire next June as head of the department of anatomy at Washington University School of Medicine, St. Louis, and will be succeeded by Edmund V. Cowdry, Ph.D., professor of cytology, whose department will be combined with the department of anatomy. Dr. Terry was born in St. Louis and in his long teaching career has instructed about 3,000 medical students in anatomy. He was a member of the National Research Council from 1921 to 1927 and formerly was president of the American Association of Physical Anthropology and of the St. Louis Academy of Science. Alumni three years ago presented his portrait to the school and set up a fund in his name to be used for research in anatomy. Dr. Cowdry has been on the faculty since 1928. He has served on commissions studying yellow fever; two years ago he was appointed director of research at Barnard Free Skin and Cancer Hospital, St. Louis. He has been a member of scientific expeditions to Alaska, Japan, Kenya Colony, Africa, Russia and South China. He taught anatomy at Peiping Union Medical College for four years and was an associate of the Rockefeller Foundation in New York.

Student Activities at Maryland

Under the direction of the Student Council, the new program of student activities at the University of Maryland School of Medicine, Baltimore, has entered its second year. The program has social as well as educational aims, and each student is assessed a fee to support the program. The first event in the current school year was an evening of motion pictures on thoracic surgery, which were discussed by Dr. Thomas B. Aycock, professor of clinical surgery. The social side of the program got under way, October 25, with a dance welcoming the freshmen. With the fees thus provided, a lounge has been fitted out to provide a comfortable place for students to congregate and relax. Refreshments are sold here. The students' lounge has already become popular.

Duke Goes on Twelve Month Schedule

To accelerate the medical course for the war, the executive committee of Duke University School of Medicine, Durham, N. C., decided on Dec. 17, 1941 that all present Duke medical students should attend summer quarters, i. e. a continuous twelve month medical course with vacations from Dec. 20, 1941 to Jan. 5, 1942, March 21 to March 30, April 6, June 13 to July 6, September 19 to October 1 and Dec. 19, 1942 to Jan. 4, 1943. The second year course in pathology will commence on July 6, 1942. The incoming first year class will register on July 6, 1942 instead of

Oct. 1, 1942. Thus Duke will go on a continuous twelve month schedule, degrees will be granted at the end of three years and the admission of a first year class will take place every nine months.

The Donnelley Scholarship Fund at Yale

The dean of Yale University School of Medicine, New Haven, Conn., announced on November 24 the establishment of a scholarship fund in memory of Reuben H. Donnelley, former vice president of R. R. Donnelley & Sons Company of Chicago. Beginning this year, a student selected each year primarily because of his character, capacity for leadership, promise of future usefulness, scholastic standing and financial need will receive from this fund an award of from \$1,000 to \$1,500. The grants will be made for one year only but may be renewed for succeeding years or distributed to a larger number of the students at the discretion of the faculty.

Yale Goes on Twelve Month Basis

The Yale University School of Medicine, New Haven, Conn., announced, December 30, that it will operate the year round for the duration of the national emergency. The course will thus be shortened from four to three years, and each year will comprise four terms of eleven weeks. Tuition for the full course will remain unchanged at \$2,000. Because of the reduction in time for elective work, the thesis requirement will be waived for classes graduating in 1943 and thereafter under the three year plan, the announcement said, but the thesis will be continued as an elective. It has also announced that provision had been made to increase the enrolment of each entering class from fifty to sixty. The summer term will begin June 29.

New Teaching Unit at Georgia

The Wilhenford Hospital is expected to be open before the new year, providing about fifty beds for the tuberculosis unit of the University Hospital at the University of Georgia Medical School, Augusta. The maintenance of this hospital, which formerly was a private hospital for women and children, will be shared by the State of Georgia, the County of Richmond and the City of Augusta. The clinical supervision will be in charge of Dr. Lucius N. Todd, professor of tuberculosis. The annex to the Newton Building also will be completed before the new year and will provide a 50 per cent increase in floor space for the laboratories for clinical diagnosis and micro-anatomy.

Smith-Reed-Russell Society

At the annual meeting of this honorary group at George Washington University Medical School, Washington, D. C., January 15, the principal speaker was Elmer Louis Kayser, Ph.D., professor of European history and dean of the university. The president of the organization, Gilbert Anderson, presided. Cloyd H. Marvin, Ph.D., president of the university, gave the address of welcome, and Dr. Walter A. Bloedorn, dean of the school of medicine, introduced the new members including honorary initiates Brig. Gen. Shelley U. Marietta, U. S. A., M. C., commanding officer of Walter Reed General Hospital; Dr. Claude M. MacFall of the department of anatomy at the university, and Dr. Harry F. Dowling, clinical professor of medicine at the university. The student members initiated were: seniors, Morton J. Folston, Joseph N. Hamm, Marvin P. Footer, Miss Shirley F. Pearlman, Charles J. Wallace Jr., and Anthony Zappala; juniors, William Robert Perkins Jr., Roy A. Petersen, Charles H. Place Jr., Boris Rabkin, James S. Reitman, Solomon Resnick, Leo

H. Siegel, Herrick M. Thomas, William K. Barton, Kenneth E. Blundon, Andrew P. Dedick Jr., John P. Docktor, Milton Dorfman, Samuel Dove, Benjamin F. Edwards, John A. Edwards, Richard H. Fischer, Edwin H. Weitzen, Dorothy S. Sislen, Sally L. Steele, Daniel J. Stone, Herbert H. Goldstein, Milton H. Hollander, Carlos F. Jimenez-Torres, Stanley W. Kirstein, James W. Long, Gordon R. MacDonald and Miss Theodora L. Peck.

A number of prominent persons in the scientific and military groups in Washington were invited as special guests to the banquet.

Indiana Selects Entering Class Earlier

Indiana University School of Medicine, Bloomington, will select the next entering class of students February 3 instead of in May, as heretofore, in order to speed up medical training to meet the war emergency, according to an announcement by the dean, Dr. Willis D. Gatch, January 5. This will make possible the beginning of training of the entering class in the summer session rather than in the fall. According to the announcement, there will be a 10 per cent increase in the number of admissions over those admitted last year for the same reason. The chairman of the faculty committee on admissions will be Dr. Carl H. McCaskey, Bloomington.

Louisiana Students Apply for Army and Navy Commissions

Recently 80 per cent of the juniors and 76 per cent of the senior students at Louisiana State University School of Medicine, New Orleans, who are eligible have applied for or have received commissions in the U. S. Army or Navy or Public Health Service, so that they may be available for service to their country on completion of their medical training. There was a total in the junior class of seventy-six eligible to apply for commissions and in the senior class a total of seventy-nine eligible.

New York University

On Dec. 8, 1941, the day on which war was declared on Japan by the United States, the student body of New York University College of Medicine, acting through its Council, signified its eagerness to serve in whatever capacity the students might be needed. During the week of January 5 special training was begun to prepare them to render maximum service. Lectures were scheduled on first aid and military medicine. The latter series will continue throughout the rest of the academic year.

The McLean Research Award at Wayne University

The first recipient of the Dr. Angus McLean Award for Research will be Dr. Robert Mayo Tenery, a resident and fellow in surgery at Presbyterian Hospital, New York. Last year Dr. Tenery was a research fellow in the department of surgery at the Wayne University College of Medicine, Detroit, where he worked on blood changes after excessive burns. The award, provided by the widow of Dr. McLean, will be presented annually by the Wayne University chapter of Nu Sigma Nu medical fraternity.

North Carolina

At the opening meeting of Alpha Epsilon Delta honorary premedical fraternity at the University of North Carolina, Chapel Hill, this fall, given in honor of the freshmen premedical students, the principle speaker was Dr. Grant L. Donnelly of Chapel Hill.

Book Notices

Medical Diseases of War. By Sir Arthur Hurst, M.A., D.M., F.R.C.P., Consulting Physician to the Salonica Army. With the cooperation of H. W. Barber, M.A., M.B., F.R.C.P., Physician in Charge of the Skin Department, Guy's Hospital, London, et al. Second edition. Cloth. Price, \$5.50. Pp. 427, with 48 illustrations. Baltimore: Williams Wood & Company, 1941.

This rather small book is a revision of Hurst's *Medical Diseases of the War* published in 1916. The collaborators mentioned have assisted in bringing it up to date. The brief chapter on skin diseases is included because "no less than 30 per cent of medical casualties in the British Expeditionary Force in the last war were the result of scabies and pediculosis." Transmissible diseases discussed carefully and well, although briefly, include amebic and bacillary dysentery, typhoid (paratyphoid) and trench fevers, meningitis, tetanus, infectious jaundice and malaria, which "easily took first place in diseases responsible for casualties in 1914-1918." A short chapter is devoted to gas poisoning. It is surprising to note that about 20 per cent of the men discharged from the British army at present have peptic ulcer. Approximately 90 per cent of these ulcers had been present before induction of the soldiers into the army. Nearly a third of the book is devoted to a good discussion of the various types of war neuroses, hysterias and anxiety states. Emphasis is laid on the importance of prompt "simple psychotherapy in the form of explanation, persuasion and reeducation." The book is well written; it reads easily and should prove especially helpful to those interested in military medicine. Students and practitioners also will find it well worth an evening's perusal.

Further Therapeutic Tests with an Anti-Leprosy Serum (in Netherlands East Indies and Other Countries). By John Reenstierna, M.D., Professor of Hygiene and Bacteriology at the University of Uppsala, Sweden. *Acta medica Scandinavica, Supplementum CXVIII.* Paper. Pp. 195, with 17 illustrations. Uppsala: Almqvist & Wiksells Boktryckeri-A.-B., 1941.

This book is of scientific interest only to the leprologist or the student of tropical medicine. It consists of introductory remarks and three parts. Part I contains the English version of about 200 cases treated with the author's anti-leprosy serum together with the critical comments of the author. Part II consists of the same case reports in their original languages, particularly Dutch. Part III is an illustrative background of seventeen plates with explanatory notes. During the years 1933 to 1937 the anti-leprosy serum of Reenstierna had been tested in several cases of leprosy in Sweden, Ethiopia and Colombia, with reported favorable action on certain manifestations of the disease. The present work is a follow-up on a larger number of cases in seventeen additional countries. The principal work was done in the Netherlands East Indies, where 92 patients were treated. In almost all cases the treatment comprised a single course of three intragluteal injections of 10 cc. of anti-leprosy serum given within one week's time. The great majority of patients given this serum were previously and subsequently treated with chaulmoogra oil or its derivatives. It is shown that, following the serum therapy, there was frequent and rapid improvement in certain leprosy manifestations, including nasal, trophic and other ulcers, loss of sensation and paralysis of eyelids and fingers. Subjective improvement in mastication, smell, taste and sight is also recorded. In the majority of cases, results are reported a few days after treatment. There are few prolonged observation reports to show the duration of the improvement. The author feels that the improvement may be only temporary; he states that "a cure through serum treatment alone of such a chronic disease as leprosy caused by a resistant micro-organism is highly improbable." He advocates alternating chaulmoogra oil and other measures of treatment with his serum, since he regards it as only a good auxiliary to the standard therapy. The improvements which are shown rapidly to follow his serum therapy he does not consider "spontaneous" amelioration. The function of the seventeen plates made before and after treatment is to show the extent of improvement. The time interval between these pictures in all cases is short, vary-

ing between a few days and six weeks. The illustrations are, for the most part, clear, but they are not always conclusive as to the amount of improvement which has taken place and they certainly fail to show the permanence of this improvement. At the Carville Federal Leprosarium, the anti-leprosy serum made according to Reenstierna's specifications was used on 4 patients with a like number of controls. No improvement was noted in any of the leprosy manifestations, and the results, entirely negative, were published only in the annual report of the institution.

Preeclamptic and Eclamptic Toxemia of Pregnancy. By Lewis Dexter, A.B., M.D., Research Fellow in Medicine, Harvard Medical School, Boston, and Soma Weiss, A.B., M.D., Hersey Professor of the Theory and Practice of Physic, Harvard University. In collaboration with Florence W. Haynes, Herbert S. Sise and James V. Warren. Cloth. Price, \$5. Pp. 415, with 45 illustrations. Boston: Little, Brown & Company, 1941.

This book has been written by internists. The senior author has had some fifteen years' experience as a medical consultant in an obstetric service, and presumably the junior author and other assistants have likewise had contact with an obstetric service. The authors modestly voice their hope of clarifying certain confused issues and to point the way to further knowledge. This they have done. There is much of an intriguing nature, and all of the material is stimulating. The chapter on the history of eclampsia with its portraits of Mauriceau and Puzoz is interesting. It shows that even at the beginning there were two schools of thought, the interventionists and the non-interventionists. Meticulous care of definitions is made. The authors distinguish between an edema in normal pregnancy and one in toxemia of pregnancy. For the animal experiments cats and rabbits were used, and there are presented the results of the exhibition of several hormone preparations, of the findings of pressor substances in the placenta, amniotic fluid and normal rabbits' kidneys. The monograph is based on a study of 100 normal pregnant patients, 100 pregnant patients with edema and 80 pregnant patients with varying degrees of hypertension. The authors feel that a careful study of a limited number of patients is of more value than a less careful study of a larger number. Only 42 of the patients with toxemia were followed for a period of six months or longer. Since only 80 patients with toxemia were studied, it is perfectly possible that some points are over-emphasized and others underemphasized. For example, 39 patients had a pre-pregnant hypertension and, since over one half of these had no increase in blood pressure during the pregnancy, the authors conclude that pregnancy does not cause further damage to a patient with hypertension. This is not the general experience of the obstetrician. The authors also describe toxic effects of pituitary resulting in possible death from circulatory collapse in several and from cortical necrosis of the kidneys in one patient. Such toxic effects have not been the experience of most obstetricians who use solution of posterior pituitary freely. The treatment recommended by the authors is properly that used at two of the maternity hospitals in the United States. The bookmaking is excellent as to paper and type, the quality of the illustrations and tables. The subject matter is presented clearly, logically and in good plain English.

Epilepsy and Cerebral Localization: A Study of the Mechanism, Treatment and Prevention of Epileptic Seizures. By Wilder Penfield, Litt.B., M.D., D.Sc., Professor of Neurology and Neurosurgery, McGill University, Montreal, and Theodore C. Erickson, M.A., M.Sc., M.D., Associate Professor of Surgery, University of Wisconsin. Chapter XIV by Herbert H. Jasper. Chapter XX by M. R. Harrower-Erickson. Cloth. Price, \$8. Pp. 623, with 163 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

The last wholly satisfactory book on epilepsy was written by Gowers sixty years ago, with a second edition which appeared twenty years later. Books in English written since then have been of specialized interest. The best of these is probably the present volume by Penfield and Erickson. It misses the rounded excellence of Gowers because it views epilepsy through the peephole of the neurosurgeon. Nevertheless, in the field in which the authors excel, the diagnosis and surgical treatment of "symptomatic" or of traumatic epilepsy and the cortical localization of symptoms experienced by the epileptic, the book is certainly the best available.

"Cerebral Localization" should perhaps have appeared first in the title, because the authors' contributions which are most original deal with the phenomena observed after electrical stimulation of the exposed cortex of conscious patients who are being operated on for the relief of epilepsy. Patients have cooperated gladly in these studies, for, as Aretaeus the Cappadocian remarked, "their good hopes render them strong in endurance." Cortical stimulations which result in symptoms or in seizures similar to those usually experienced by the patient indicate the place of origin and the pathway of spread of spontaneous seizures. These observations are of great importance in understanding the physiologic anatomy of many of the sensory and motor symptoms involved in epileptic seizures. This knowledge in turn is essential for the neurosurgical treatment of epilepsy. The authors recommend the radical excision of scars which involve the brain substance and give the results on seizures in 165 cases in which operation was performed. The operative mortality was 4 per cent. These matters, abundantly documented by drawings, photographs and detailed case histories, occupy about one half of the volume. A chapter of seventy-five pages written by Herbert Jasper describes electroencephalography and the contribution of this technic to the localization of brain lesions. A thirty page chapter by M. R. Harrower-Erickson discusses psychologic aspects, especially the use of the Rorschach test. Patients with symptomatic epilepsy are the main beneficiaries of the Montreal studies. However, these comprise but a minority of the army of epileptic patients. The authors give some attention, about one sixth of the volume, to the majority group of essential epilepsy and their medical treatment. These chapters, being reports of the work of others, do not maintain the originality and value of the rest of the book. Among drugs, bromide receives six pages, phenobarbital five and phenytoin sodium three. The bibliography comprises some eight hundred references. This volume can be recommended to neurologists, neurosurgeons, physiologists and all who are concerned with the working of the human brain and with epilepsy.

Roentgen Diagnosis of the Extremities and Spine. By Albert B. Ferguson, M.D. *Annals of Roentgenology, A Series of Monographic Atlases, Volume XVII.* Enlarged first edition. Cloth. Price, \$12. Pp. 462, with 562 illustrations. New York: Paul B. Hoeber, Inc., 1941.

The publication of a monograph makes the author more liable to criticism as to the choice of material or the space devoted to certain subsections of the general topics than might be expected in case of a book by many authors. Minor criticisms cannot detract seriously from the general value of this excellent monographic atlas. The illustrations constitute a valuable collection of reference material with a brief but succinct illuminative text. Especially interesting is the section devoted to the lame back. Members of the American Medical Association who have seen the Lame Back Exhibit at recent meetings will prize this material as constituting a detailed reproduction in handy form for study. Evidently the author shares the opinion gradually gaining ground that it should be possible to make a clinical diagnosis of posterior protrusion of an intervertebral disk with sufficient surety to indicate the need of surgical exploration or of surgical fusion, without the necessity of injecting air or iodized oil into the neural canal. The opening chapter on the analysis of roentgenograms should be read by every radiologist and diagnostician dealing with bones and joints.

Beiträge zur Röntgendiagnostik der Otitis media acuta und ihrer Komplikationen in Schläfenbein. Von Sölve Wellin. *Acta Radiologica, Supplementum XLII.* Paper. Price, 20 Swedish kroner. Pp. 180, with 105 illustrations. Lund: Hakan Ohlssons Boktryckeri, 1941.

The author has developed into a monograph his investigations and clinical observations on the value of the roentgen study in the clinical study of acute otitis media. The increasing general use of the roentgen ray in otolaryngologic diagnosis has enabled him to accumulate material amounting to 926 patients diagnosed as having acute middle ear disease between the years 1934 and 1939. The objects of this investigation were (1) to determine the value of the various roentgenologically demonstrable changes and especially the diagnostic and prognostic value of reduced lime content in the mastoid intercellular septums, (2) to ascertain the diagnostic possibilities in the roentgen evidence of the different complications of acute mastoiditis which are associated

with pathologic and anatomic changes of the temporal bone and (3) to show how early in life the cells of the temporal bone can be demonstrated roentgenologically and what value the roentgen evidence offers from the clinical point of view, even at birth. In developing the study of these topics the author devotes chapters to a historical review of the subject, to a satisfactory discussion of technic, giving in detail the instructions for the various projections of the mastoid cells commonly employed, a detailed study of the roentgen anatomy and roentgen pathology of the mastoid region, concluding with a clinical section in which are set forth the details and illustrative roentgenograms of a great many interesting case reports. A complete bibliography is appended. The author is thoroughly convinced of the clinical value of the roentgen ray study in the diagnosis of acute mastoid disease and its complications and declares that even as early as birth the developing cells are roentgenologically demonstrable and that the roentgen examination is of value in acute middle ear infection in nurslings and children as well as in adults.

A Short Account of an Anti-Leprosy Serum and Its Therapeutic Value. By John Reenstierna. Paper. Price, 3 Swedish kroner. Pp. 32, with 10 plates. Uppsala: A.-B. Lundequistska Bokhandeln; Leipzig: O. Harrassowitz, 1941.

This brochure is a recapitulation of the author's previous publications on the subject. Reenstierna is of the opinion that the acid fast bacilli of both Hansen and Koch are only evolutionary forms of a lower fungus of nature which in the distant past adapted itself to the human organism. He seems convinced that Kedrowskij in 1900 and he himself in 1912 cultured the true Hansen bacillus. Their cultures at first showed only non-acid fast micro-organisms, but later the majority appeared to be of acid fast forms. By growth in toluene glycerin bouillon a culture is obtained which can be used to immunize sheep. The author gives in detail his technic for the production of the anti-leprosy serum. All the case records and illustrations used have appeared in previous publications. The rapidity of the therapeutic action claimed for the serum in such a chronic disease as leprosy and the limitation of this action to the minor manifestations of the disease do not seem to be strong evidence for its specificity. There are postexamination reports on 41 cases. These reports often do not state the interval of time that has elapsed since treatment. These reports are not very extensive or descriptive and in most cases leave the reader in doubt as to the permanence of the improvements attributed to the anti-leprosy serum.

The Essentials of Occupational Diseases. By Jewett V. Reed, B.S., M.D., F.A.C.S., and A. K. Harcourt, B.S., M.D. Cloth. Price, \$1.50. Pp. 225. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

Much useful information derived from a great variety of authentic sources on symptoms, diagnosis and treatment has been collected in this compendium on the occupational diseases. Prevention is not discussed. The interesting observation is made that medical management of occupational diseases is frequently complicated because the patient more often than not has already made his own diagnosis. The authors contend, therefore, that physicians should be cautious about advancing opinions regarding the existence or nonexistence of a disease unless they are reasonably familiar with possible exposures in the working environment. Only after such consideration do the physical and laboratory findings assume real value.

The Twentieth Century Fund. Twelve Years' Review—1929-1940 and Annual Report 1939 and 1940. Paper. Pp. 65. New York, 1941.

During the twelve years since 1929 the Twentieth Century Fund has devoted its resources to determining economic policies and furnishing economic leadership. This is staking out a rather wide claim. It is hard to find facts to indicate that public policies in such fields as economic sanctions, debts, stock markets, big business, government credit, collective bargaining and housing have been greatly affected by the studies of this foundation. Certainly its contribution to the Committee on the Costs of Medical Care and publications in this field were not responsible. It seems to be implied, for the fact that "certain medical societies themselves, especially in the Northwest, have set up a periodic payment plan. . . ." During these twelve years the fund has expended \$1,942,006.04.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TYPHOID IMMUNIZATION

To the Editor:—Kindly advise our local civil defense council as to generalized typhoid inoculations among civilians. It is common knowledge that, throughout the South, typhoid is pandemic and primitive conditions exist. In these areas many army camps are located. While it is true that all army men are inoculated against the typhoid group, is there any possibility of these men being carriers while on furlough at home here in the North? Does passive inoculation prevent carriers?

O. L. Murphy, M.D., Simsbury, Conn.

ANSWER.—General immunization to typhoid of a civilian population living in a modern community is not worth while; the necessary effort would be more profitably expended in other directions. It is the difficulty of maintaining adequate sanitary facilities for an army in the field that gives universal immunization of troops its value.

The carrier rate is directly and intimately related to the prevalence of clinical typhoid; present evidence strongly supports the belief that the chronic carrier almost always has a history of clinical typhoid and it is seldom if ever possible to rule out a previous infection completely. Since compulsory immunization was instituted, the carrier rate in the Army has been dependent on prior experience of the men with typhoid and is estimated (Dunham: Army Medical Bulletin No. 23, 1930) to be less than 1 per thousand; a conservative estimate of the carrier rate in the civilian population is 2 to 4 per thousand. Since 70 to 80 per cent of chronic carriers are women, it would require a typhoid rate in the army camp four or five times that of the home community to raise the carrier rate among the troops to the level prevailing in the home community. In the absence of such prevalence it is unlikely that the carrier rate in the civilian population is augmented by the return of men on furlough.

Typhoid antiserum is almost completely lacking in therapeutic value; hence its administration probably does not affect the incidence of the chronic carrier state to a significant degree. There is not sufficient information available to answer the questions of (a) the effect of prior immunization on the chronic carrier rate in recovered patients and (b) the relative frequency of ambulatory typhoid in immunized and nonimmunized groups. In the latter case the disease would have to be almost completely lacking in symptoms to escape detection in the Army.

TOXICITY OF MAGNESIUM

To the Editor:—A patient is now working in an atmosphere of magnesium powder. I have been unable to find anything as to its possible harmful effects. If it is harmful, would you kindly advise as to the best methods for its control?

Leo Hymovich, M.D., Stamford, Conn.

ANSWER.—Compared with arsenic or lead, the toxicity of magnesium is low; yet three types of injury may be recognized. The first of these is magnesium metal fume fever, a condition similar to the well known brass founders' chills. This disorder follows exposure to recently produced magnesium oxide and may be expected when the magnesium is in molten form. The literature furnishes extensive descriptions of the disorder.

Secondly, in *Light Metals* for May 1941 there are descriptions of peculiar cutaneous injuries caused by implanted particles of light metals. It is there stated that:

Injuries caused by light metals tend to pursue a course characteristically different, and more severe, than those resulting from the heavy metals. The examination of 5,000 instances of such injury has enabled the investigators to establish the fact that two well defined types exist.

In the first, a visible particle of metal is found. If the injury is not treated, there ensues, in two to three days, a rapid and progressive inflammation of the site and of the lymphatic system. Vacuole formation occurs in the tissues as a result of hydrogen formation consequent on chemical reaction between the metal and the fluids in the tissues.

In the second type of injury the causative agent is metal dust, which enters a wound resulting, probably, from some other accident. The wound heals rapidly, but a painful granulomatous infiltration, which may persist for months, occurs. Subsequently these suddenly develop acute symptoms of inflammation, as in the first type of injury. Vacuole formation, however, does not occur. Instead, granulomatous cells and eosinophils, together, at times, with giant cells, are found.

A third form, and less well established, represents a spastic gastroenteritis characterized by abdominal pain, a sensation of pressure, loss of appetite, constipation and loss of weight, which may be accompanied by a cystitis. While this may be caused by inhalation of magnesium oxide, it has been produced by the ingestion of 4 Gm. of finely divided metallic magnesium over a period of forty-four days. The literature describing this third type recognizes the possibility that traces of manganese, copper, silicon and aluminum, along with the major constituent, magnesium, may have contributed to this disorder. The chief practical danger from magnesium centers about its ready inflammability and explosibility when in the form of fine dust. Its danger is increased through the presence of oils. The necessary personal protection against flame injuries is likely to assure practical protection against disease states with the exception of injury to the skin, which apparently may be produced by single minute particles. Protection calls for the wearing of flame proof clothing, which should be kept free from grease and oil. The surface of such clothing should be smooth and tightly woven to prevent the entry of sharp particles. In machining, large quantities of cooling agents should be employed to eliminate explosion reactions, and most of all there should be provided adequate dust exhausting facilities. In the presence of fire, obviously water or other liquid extinguishers are not suited and instead resort should be had to sand, talc, iron shavings or asbestos mats for smothering purposes. Lastly, it is noted that in plants handling large quantities of magnesium, explosion walls and other special features related to fires and explosions should be introduced.

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Pielstick, F.: Disease from "Electron" Metal (Poisoning by Metallic Magnesium?), *Aerztl. Sachverständ., Ztschr.* 42: 73, 1936; abstr., *J. Indust. Hyg.* 18: 107 (Sept.) 1936.

IS POLAR BEAR LIVER POISONOUS?

To the Editor:—I have twice been told by arctic explorers that polar bear liver is poisonous. Any information that you can give me as to the accuracy of this statement and as to the nature of the poison contained, if there is one, will be greatly appreciated.

W. Osler Abbott, M.D., Philadelphia.

ANSWER.—There is a lack of conclusive evidence and a difference of opinion regarding the toxicity of polar bear liver and of the livers of other arctic animals. Some explorers have stated that the livers of polar bears, seals and Eskimo dogs are toxic, and three of these explorers are quoted in an article by H. Kohl (*Ztschr. f. Fleisch u. Milchhyg.* 40:45, 1929; *Bull. Hyg.* 5:126, 1930).

August and Marie Krogh in their "Studies of the Diet and Metabolism of Eskimos Undertaken in 1908 on an Expedition to Greenland" (*Meddelser om Grønland* 51:1, 1915) state that the livers of polar bears and of one species of seal (*Phoca barbata*) are rejected by Eskimos and their dogs because of their poisonous qualities.

Stefansson in his book "The Friendly Arctic" (New York, Macmillan Company, 1921) states that he has eaten polar bear liver many times without any ill effect but has observed others who complained of severe headaches and nausea after such a meal. He claims, as do many other explorers, that seal liver is a delicacy relished by the whalers as well as the Eskimos and is in no way poisonous.

There is an interesting report in Danish by J. Lindhard (*Hospitalstidende* 3:338, 1910) regarding the toxic effect of well cooked polar bear liver on 19 men on a Danish expedition to Greenland in 1907. He reports that within five to six hours after the ingestion of the liver the subjects developed vertigo and an uncontrollable desire to sleep. This was followed by severe and throbbing headaches in all 19 men. The temperature remained normal or slightly subnormal. All complained of a bad taste in the mouth, and ten showed scaling of the skin around the mouth. Some became nauseated and vomited, but the author stated that only 1 subject was severely affected in this way. Three showed tonic and clonic convulsions. In 2 cases, convulsions were limited to the lower extremities, but in the third they spread to the muscles of the trunk and shoulders. Symptoms did not entirely disappear until six days after the ingestion of the liver.

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THE INFLUENCE OF ANDROGENIC AND ESTROGENIC SUBSTANCES ON THE SERUM CALCIUM

IN CASES OF SKELETAL METASTASES FROM
MAMMARY CANCER

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AND

HELEN Q. WOODARD, PH.D.

NEW YORK

The favorable reports¹ of retardation of the growth of skeletal metastases from breast cancer following castration of premenopausal women suggested that similar results might be produced by injections of testosterone propionate. This clinical experiment was begun more than two years ago. Thirty-three patients with skeletal metastases from breast cancer were given doses of from 5 to 25 mg. of testosterone propionate in sesame oil one to three times a week for totals of ten to twelve doses. About one half of the patients obtained relief from pain, but there was neither clinical nor roentgenographic evidence of control of the disease in any patient. Because relief from pain had been obtained, 3 patients were subjected to more intensive therapy. The unexpected hypercalcemia and apparently increased growth of the metastases which followed massive doses of testosterone propionate and subsequent smaller doses of estrone are the main subjects of this report.

REVIEW OF THE LITERATURE

In reviewing the literature one is impressed by the reports of unusual changes occurring in the skeletal system in association with breast cancer. Paget,² after referring to the work of Török and Wittelshöfer, added 6 cases of "fragility of the bone" in patients with cancer of the breast. Spontaneous fractures occurred in such areas of bone absorption and yet no evidence of metastatic cancer could be found. He expressed the opinion that "a general degeneration of the bones sometimes occurs in cases of cancer of the breast, yet without any distinct deposit of cancer in them," and later added that he believed that the bones suffered

in a special way. Sheild³ called attention to Paget's observations and reported similar ones. Williams,⁴ however, was inclined to attribute these manifestations to cachexia and disuse. Klemperer⁵ made extensive postmortem studies on a patient aged 46 with widespread skeletal metastases from breast cancer. He was impressed by the status of the uninvolved areas and found that the changes resembled osteomalacia; in fact, he suggested the use of the term "osteomalacia carcinomatosa." Histologic studies of the parathyroids revealed hyperplasia which he interpreted as a part of the defense mechanism of the body. A similar case of parathyroid hyperplasia is recorded by Delannoy, Driessens and Demarez.⁶ Their patient, aged 45, had extensive skeletal metastases from a breast cancer. A mass was removed from the thyroid region and on histologic study proved to be hyperplasia of a parathyroid gland. After the operation there was a slight elevation of the blood calcium from 11.6 mg. to 14.2 mg. per hundred cubic centimeters. They were particularly impressed by the considerable relief of pain and general improvement in the patient following the operation.

Mason and Warren⁷ reported a case of extensive osteolytic metastases with hypercalcemia (17.5 mg. per hundred cubic centimeters) and a metastatic mass of adenocarcinoma in the right parathyroid region. Removal of this caused no appreciable change in the serum calcium level. Their patient, aged 46, had previously had a simple mastectomy for what was said to be a cancer of the breast. Egoville⁸ recorded a case of breast cancer with osseous metastases and a serum calcium level of 18.1 mg. per hundred cubic centimeters. This patient, aged 30, had as her first symptom a persistent pain in the back, beginning in the sixth month of pregnancy. Postmortem studies revealed no parathyroid hyperplasia, but extensive deposits of calcium were found in the lungs and kidneys. He concluded that this was an instance of "metastatic calcification" such as described by Virchow and said to occur in many cases of widespread bone absorption and in inflammatory and chronic diseases as well as in parathyroid disturbances and primary diseases of the bone. The Gutmans and Tyson,⁹ in studying

3. Sheild, A. M.: *Diseases of the Breast*, London, Macmillan & Co., Limited, 1898, pp. 455 and 465.

4. Williams, W. R.: *Diseases of the Breast*, London, John Bale & Sons, 1894, p. 214.

5. Klemperer, Paul: *Parathyroid Hyperplasia and Bone Destruction in Generalized Carcinomatosis*, Surg., Gynec. & Obst. 36: 11 (Jan.) 1923.

6. Delannoy, E.; Driessens, J., and Demarez, R.: *Ostéose cancéreuse diffuse avec réaction parathyroïdienne secondaire à un cancer du sein ignora*, Bull. Assoc. franc. p. l'étude du cancer 28: 396 (March) 1939.

7. Mason, R. L., and Warren, Shields: *Metastatic Carcinoma Simulating Hyperparathyroidism*, Am. J. Path. 7: 415 (July) 1931.

8. Egoville, J. W.: *Metastatic Calcification in a Case of Carcinoma of the Breast*, Arch. Path. 26: 1047 (Nov.) 1938.

9. Gutman, A. B.; Tyson, T. L., and Gutman, Ethel Benedict: *Serum Calcium, Inorganic Phosphorus and Phosphatase Activity, in Hyperparathyroidism, Paget's Disease, Multiple Myeloma and Neoplastic Disease of the Bones*, Arch. Int. Med. 57: 379 (Feb.) 1936.

From the Breast Department, service of Dr. Frank E. Adair, and the Chemistry Department, Memorial Hospital.

The testosterone propionate Oreton used in this study was supplied by Dr. Erwin Schenck, Schering Corporation, Bloomfield, N. J.

1. Aliboni, H.: *Castration by Roentgen Rays as an Auxiliary Treatment in the Radiotherapy of Cancer Mammæ at Radiumhemmet*, Stockholm, Acta radiol. 11: 614, 1930. Dresser, Richard: *The Effect of Ovarian Irradiation on the Bone Metastases of Cancer of the Breast*, Am. J. Roentgenol. 35: 384 (March) 1936. Smith, E. G.: *Sterilization in Carcinoma of the Breast*, ibid. 26: 65 (July) 1936.

2. Paget, Stephen: *The Distribution of Secondary Growths in Cancer of the Breast*, Lancet 1: 571, 1889.

the blood chemistry of primary and secondary neoplasms of bone, listed the serum calcium values in 13 cases of metastatic mammary cancer. The values ranged from 9.9 mg. to 13.1 mg. per hundred cubic centimeters. The three highest determinations were made on patients aged 35, 40 and 41 respectively.

The last four reports strongly suggest a systemic factor which materially contributes to the presence and

sible that, prior to the menopause, ovarian hormones may have contributed to the activity of the bone metastases. We have no adequate explanation for the apparent activity in the postmenopausal group.

From clinical observations we have been impressed by two things: first, in the premenopausal group osseous metastases usually occur early and are apt to precede the involvement of distant viscera; second, in the postmenopausal group bone metastases occur relatively late and may follow or be associated with visceral metastases. It seems that in the natural course of events skeletal metastases may be delayed but not prevented by the endocrine disturbances of the menopause.

REPORT OF CASES

CASE 1.—History.—L. L., a white woman aged 26, admitted to Memorial Hospital Oct. 21, 1939, complained chiefly of a severe pain in the thoracic spine of two and a half months' duration. Prior to the onset of the present illness she had enjoyed good health. The menses had appeared at 13 years and were regular, with the flow lasting about six days. She had never experienced any premenstrual symptoms in the breasts.

The patient became aware of the present illness, which began insidiously and without symptoms, one year previously when she accidentally noticed a small growth in the right breast. This had persisted without noticeable change except for slight pain during the past two weeks. The patient thought that the pains in her back had been caused by a sprain, but they had persisted and gradually extended to the pelvis and both thighs. For this reason she had been partially incapacitated and had remained in bed during most of the past month. There had been a loss of weight of 17 pounds (7.7 Kg.) but no associated gastrointestinal, respiratory or urinary disturbances.

Physical Examination.—The patient was well developed but undernourished and had a noticeable overgrowth of hair on the extremities. Positive physical manifestations were as follows: The contour of the right breast was altered by a mound-like swelling located in the upper central portion of the breast. This tumor measured 4 by 3.5 by 2.5 cm. and was attached



Chart 1.—An analysis of 200 instances of skeletal metastases occurring (broken line) in 1,380 cases of breast cancer (solid line) showing a definite decrease in the frequency of bone metastases during the years of the normal menopause.

activity of skeletal metastases from breast cancer. We believe that the ages of these patients are significant in that they fall within the range of ovarian activity. This view seems to be supported by observations on the effect of the menopause on skeletal metastases.

EFFECT OF THE MENOPAUSE ON SKELETAL METASTASES

It is generally agreed that an artificial menopause following ovarian irradiation will temporarily retard the activity of skeletal metastases in certain cases of breast cancer. This is demonstrated by the relief from pain, apparent reduction in the rate of growth and occasional calcification of osteolytic lesions. These manifestations of clinical improvement appear at the onset of the menopause and continue mainly during the period of hormone imbalance and readjustment which follows the castration. After a variable time, ranging from several months to one or two years, there is evidence of reactivation of disease. From limited clinical observations we are of the opinion that the renewed activity coincides with a decline of the menopausal symptoms.

While this sequence of events is more clearly seen at the time of artificial menopause, it may to some extent be noted during the natural menopause. An evaluation of any effect of a natural menopause is rendered difficult because of variations in time and duration of the menopause in different patients. Furthermore, authorities differ as to what constitutes the onset of the menopause. Many believe that the hormonal disturbances may begin several years before and continue many years after the cessation of menstruation. Hence in analyzing a large series of cases any effects observed may be expected to involve a period of several years.

We have studied the age incidence in 200 instances of skeletal metastases occurring in 1,380 cases of breast cancer. In chart 1 the percentage of cases of mammary cancer in which bone metastases developed has been determined for each five year period. One notices immediately a decrease in the percentage of skeletal metastases during the years of the natural menopause, while a relatively high percentage occurs just before and after the years covering this event. It seems pos-

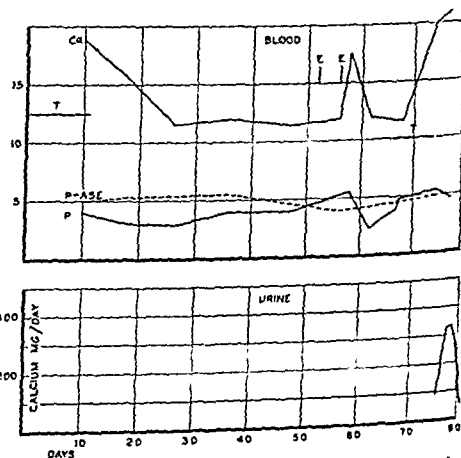


Chart 2.—Summary of the calcium (Ca), phosphorus (P) and phosphatase (P-ase) levels in the serum and determinations of the urinary calcium (Ca) in case 1. Serum calcium and phosphorus are given in milligrams per hundred cubic centimeters; serum phosphatase is given in Bodan-ky units per hundred cubic centimeters and urinary calcium in milligrams excreted per day. Note the sharp rise of the serum calcium following the injections of both testosterone propionate (T) and estrone (E).

to the skin but moved slightly over the chest wall. In the midaxilla there was a metastatic node 1 cm. in diameter. Examination of the back revealed no gross abnormalities except a definite rigidity of the spine and tenderness over the third dorsal vertebra. Passive motion of the hip joint disclosed no evidence of limitation, but walking was extremely difficult because of pain which originated in the sacroiliac region and

radiated to the knees. Blood smears showed slight secondary anemia; urinalysis was negative. Roentgenographic studies demonstrated osteolytic lesions in the ribs, spine, cranium and pelvic bones. A roentgenogram of the chest was negative. Aspiration biopsy of the breast tumor was reported "cancer."

Treatment.—Owing to the widespread metastases and noticeably favorable response to small doses of testosterone propionate by other patients, it was decided to treat this patient by endocrine therapy alone. She was admitted to the hospital and on November 7 (*T*, chart 2) 25 mg. of testosterone propionate in 1 cc. of sesame oil was injected into the gluteal muscle. During the following six consecutive days the dose was increased to 75 mg. daily, making a total of 475 mg. in seven days. Because of certain laboratory studies and menopausal symptoms she was given, six weeks later,

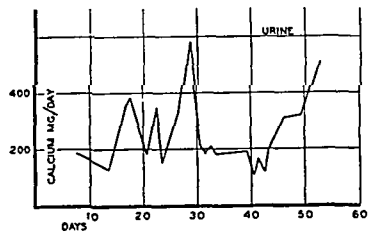


Chart 3.—Summary of blood and urinary determinations in case 2. Elevation of the phosphatase indicates an attempt at bone regeneration. The date of irradiation is noted by X. Other symbols are explained in legend for chart 2.

2 mg. of estrone (*E*) in oil intramuscularly and, after an interval of five days, an additional 4 mg. On Jan. 2, 1940, nine days later, a second series of testosterone (*T*) injections was started, 50 mg. daily being given for a total of seven doses.

Clinical Observations.—On the sixth day of the initial course of injections the patient began complaining of severe headaches, lack of appetite and a sharp increase of pain in the back and pelvis. These symptoms continued the next day and were accompanied by nausea and vomiting. The patient appeared stuporous, and it was thought that she was suffering from cerebral metastases. The symptoms persisted, and for three days the patient took only limited amounts of fluids, supplemented by infusions of dextrose and saline solution. At this time blood studies revealed a calcium determination of 18.9 mg. The testosterone injections were discontinued and the symptoms gradually subsided. It is significant that a similar syndrome followed two days after the administration of the estrone and likewise after the second series of testosterone propionate injections. Determinations of the calcium, phosphorus and phosphatase during this time are shown in chart 2.

The patient did not menstruate at any time while under observation. Coincidentally with the symptoms of hypercalcemia she complained of feeling flushed about the head, neck and upper part of the thorax. These flushes appeared to simulate those associated with the menopause. The sharpness and frequency of the flushes decreased, but they did not entirely disappear when the serum calcium returned to normal levels. Pains in the back and pelvis persisted during the course of the injections. There was a slight increase in the size of the breast tumor. Roentgen studies demonstrated a striking increase in the extent of the osteolytic metastases of the ribs, spine and pelvic bones. In general, the clinical course of this patient was one of progressively failing health owing to widespread and uncontrolled metastatic disease. She continued to lose weight, became cachectic and anemic and died January 17.

Autopsy.—This revealed a carcinoma of the right breast with involvement of the adjacent axillary lymph nodes. The marrow cavities of the ribs, sternum, vertebrae and pelvic bones were solidly filled with carcinomatous tissue. Small foci of tumor cells were found in the ovaries, the right lobe of the

thyroid and the spleen. The lungs were not involved grossly, but microscopic examination revealed tumor cells in the bronchial lymphatics.

Histologic examination revealed an infiltrating duct carcinoma grade 3 in the breast metastatic to the regions previously described. Sections of the parathyroids showed that the normal arrangement of the cellular structure had been completely altered. There was evidence of a complex hyperplasia. This was diffuse throughout and involved principally the oxyphilous cells and the clear cells which are intermediate between the chief and the water clear (wasserhelle) types. The cellular proliferation did not form true acini but was arranged about globules of mucoid material, apparently resulting from complete mucoid degeneration of one or more cells.

Additional microscopic studies were of some interest. In the normal breast there was a definite fibrosis with almost complete disappearance of the breast epithelium. Few acini remained, and these were lined by atrophic and degenerating epithelial cells. The whole picture was one of advanced sclerotic involution commonly seen but to a less severe degree in senile women. Sections of the ovaries revealed almost complete absence of oocytes with moderate proliferation of the stroma.

CASE 2.—B. V., a woman aged 37, applied for admission to Memorial Hospital Jan. 15, 1940 with a history of having had a left radical mastectomy in another institution during November 1938. The pathologic report was infiltrating duct carcinoma grade 2. Following the operation she had remained well until one month prior to her initial visit. At that time she began having persistent pains in the lower part of the back. Associated with the present illness the patient had a feeling of general malaise, loss of appetite and a slight decrease in weight. Her menses were regular though scant.

Physical Examination.—The patient was fairly well developed and appeared chronically ill. The heart, lungs and abdomen were essentially normal. Locally there was a well healed scar on the left side from a radical mastectomy, without evidence of local recurrence or regional metastatic disease. Slight tenderness was noted over the upper part of the lumbar spine.

Roentgenographic studies revealed a destructive metastatic process involving the left innominate bone and the body of

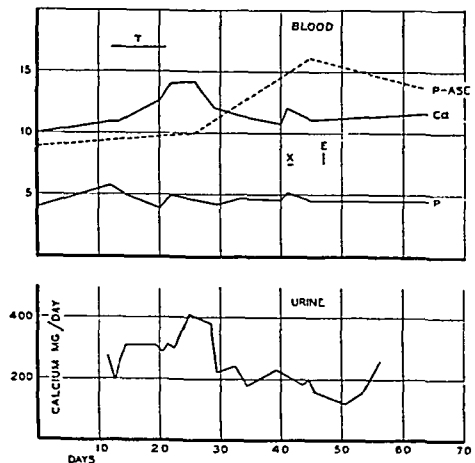


Chart 4.—Summary of blood and urinary determinations in case 3. Symbols are explained in legends for charts 2 and 3.

the first lumbar vertebra. A roentgenogram of the chest was negative. A complete blood count revealed slight secondary anemia.

Treatment.—The patient was admitted to the hospital January 22. One week later (*T*, chart 3) injections of testosterone propionate were started. During the following eight days she received a total of 400 mg., given at the rate of 25 mg. twice a day. Because of symptoms of hypercalcemia the injections were discontinued.

The metastatic lesions became more painful and on February 26 (X) general body irradiation totaling 30 roentgens was given. On March 4, 2 mg. of estrone was given intramuscularly. This was repeated sixteen days later. All other treatment was symptomatic and for the most part consisted of infusions to replace fluids lost by vomiting. On one occasion a blood transfusion was given because of the secondary anemia.

Clinical Course.—Chart 3 shows the blood studies on admission and summarizes the changes which occurred during the course of treatment. The initial serum calcium was 11.6 mg. On the third day after the initial dose of testosterone propionate the patient complained of slight nausea and headache. The nausea became progressively worse and later was followed by vomiting. The serum calcium determination on the sixth day of treatment showed an increase to 12.4 mg. This increase continued until the serum calcium level was reported 15.4 mg. on the fifth day after the injections had been discontinued. Associated with the elevation of the blood calcium the patient began having hot flushes similar to those described in case 1. These symptoms subsided but did not disappear when the serum calcium returned to a normal level. A similar syndrome followed the injection of the estrone. During and after the course of treatment the patient obtained no relief from pain. An enlarged liver and signs of pulmonary metastases developed. Roentgen studies revealed a rapid increase in the size of preexisting foci of skeletal metastases as well as the development of additional foci. The patient left the hospital for terminal care in another institution and died in December. Permission for autopsy was not obtained.

CASE 3.—S. S., a woman aged 60, admitted to Memorial Hospital Jan. 13, 1940, gave a history of having had a radical mastectomy on the right side in July 1937. Following this her health had remained good until eight months prior to the date of admission, at which time she began to have pains in the left thigh. Roentgenographic examination at that time showed metastases in the left femur and pelvic bones. These were treated by roentgen therapy but apparently there was only slight relief. Recently pains developed in the right knee, left shoulder and right clavicle. There had been some loss of weight but no other associated systemic disturbances. For one year prior to her operation menstruation had been irregular but, following the operation, she had had on one occasion a scant menstrual flow. Apparently the menopause had not been established at the age of 58.

Physical Examination.—The patient appeared undernourished and chronically ill. Physical manifestations related to the present illness were a recurrent tumor 2 by 2 by 1 cm. located at the junction of the right clavicle and sternum, and a considerable swelling of the midportion of the right thigh. Radiographic studies demonstrated widespread osteolytic metastases involving the vertebrae, ribs, skull, sternum, left scapula, pelvic bones and both femurs. Roentgenograms of the chest revealed questionable metastases in the left lung. A blood count showed only slight secondary anemia.

Treatment.—Beginning on January 28 (T, chart 4), the patient was given two 25 mg. ampules of testosterone propionate daily for ten days. Because of continued pain, general body irradiation totaling 30 roentgens was administered on February 26 (X). This was followed by 2 mg. of estrone in oil on March 4 (E). Other treatment was mainly symptomatic and included treatment of the local recurrence with the radium pack and high voltage roentgen therapy to the cervical vertebrae.

Clinical Course.—The blood chemistry and urine studies are summarized in chart 4. It is interesting to note that, in spite of the widespread skeletal lesions, the initial serum calcium determination was well within normal limits. Following the elevation of the blood calcium a similar syndrome but less severe than those described in the two previous cases developed. Hot flushes were experienced on the seventh day of injections. Nausea was persistent but no vomiting occurred. A pathologic fracture of the right humerus was sustained on

March 19. Other areas of skeletal metastases increased in size and later a fracture of the right clavicle occurred.

After several weeks of progressively failing health the patient died on April 27.

Autopsy.—This revealed generalized skeletal metastases to the ribs, sternum, vertebrae, ilium, pubis, both clavicles, both humeri, the left femur and the sacrum. Other metastatic foci were found in the lungs, peritoneum, para-aortic, mesenteric and omental lymph nodes as well as the liver and pericardium. Histologic examination confirmed the gross examination and revealed an additional focus in one parathyroid.

COMMENT ON CHEMICAL FINDINGS

Summarizing the blood chemical findings in these 3 cases of bone metastases, we see that after each course of testosterone propionate there was a sharp rise in serum calcium which persisted for a week or ten days after the cessation of therapy. In 2 (cases 1 and 2) there was a similar rise after the administration of estrone. In 2 (cases 2 and 3) a rise in serum phosphatase was found from two to three weeks after the injections of testosterone. In all 3 cases the serum inorganic phosphorus was occasionally or persistently above normal. The daily urinary excretion of calcium tended to follow the blood levels rather closely.

It is obvious from the results of the clinical, chemical and roentgenographic examinations that the administration of testosterone propionate was followed by an increase in bone absorption associated with flooding of the circulation with calcium and phosphorus. In 2 of the 3 there was an attempt at bone repair by increased phosphatase formation.

The question now arises whether the effect of testosterone propionate on bone is primary or secondary. There is a theoretical possibility that a primary metabolic defect might exist in patients with breast carcinoma which would result in the transformation of sex hormones into a sterol which would directly affect calcium and phosphorus metabolism. This substance, by promoting withdrawal of calcium and phosphorus from the bones, might render them more susceptible to metastatic invasion. Such a hypothesis would explain the strong tendency of breast carcinoma to form skeletal metastases, particularly in the premenopausal and postmenopausal group. On the other hand, testosterone propionate, instead of preparing the ground for the establishment of metastases to bone, may simply stimulate the metabolic activity of metastases already established, with secondary increase in the rate of bone destruction.

One method of deciding which of these two hypotheses is correct is to study the effect of sex hormones on the serum calcium and phosphorus of patients with carcinoma of the breast which has not yet metastasized to bone. This has been done in 2 cases. One patient received 600 mg. of testosterone in twelve doses over a period of three weeks. Another patient, who had carcinoma of the rectum as well as carcinoma of the breast, received 5 mg. of estrone in three doses and one 10 mg. dose of progesterone during two weeks. The serum calcium and phosphorus were within normal limits throughout, and no significant changes were observed during hormone therapy. The negative results in these 2 cases suggest that the hormones used have no effect on the calcium and phosphorus metabolism of patients with carcinoma of the breast which has not yet metastasized to bone.

In a previous publication one of us¹⁰ observed that in patients with carcinoma of the breast metastatic to bone who had not received hormone therapy the serum inorganic phosphorus tended to be slightly elevated and the serum calcium to show a rather wide variation. As this observation has an obvious bearing on the subject of the present paper, we have extended our previous studies to include serum calcium determinations on (a) 45 normal persons, (b) 49 patients with osteitis deformans, (c) 52 patients (48 women and 4 men) with carcinoma of the breast metastatic to bone, (d) 26 women with carcinoma of the breast without bone involvement, (e) 78 men with carcinoma metastatic to bone and originating in organs other than the breast. In about half of the last group the primary growth was in the prostate and the metastases were predominantly osteoplastic. The results are sum-

Summary of Serum Calcium Readings

Diagnosis	Number of Cases	Average Serum Calcium, Mg. per 100 Cc.	Per Cent of Total Readings Between					13.0 Mg. per 100 Cc.
			8.0-8.9 Mg. per 100 Cc.	9.0-9.9 Mg. per 100 Cc.	10.0-10.9 Mg. per 100 Cc.	11.0-11.9 Mg. per 100 Cc.	12.0-12.9 Mg. per 100 Cc.	
a Normals.....	45	10.7	0	2.2	75.6	15.5	6.7	0
b Osteitis deformans . .	49	10.4	2.0	8.2	59.2	26.5	4.1	0
c Carcinoma of breast with bone metastases	52	10.0	1.9	7.7	50.0	30.8	3.8	3.8
d Carcinoma of breast without bone metastases	26	10.8	0	3.9	61.5	26.9	7.7	0
e Males with carcinoma and metastases to bone	78	10.5	2.5	9.0	65.4	21.8	1.3	0

marized in the accompanying table. The differences between the average serum calcium values for the different groups are too small to be significant. It is suggestive, however, that the lowest average values are for groups *b* and *c*, in which the bone changes were chiefly productive, while the highest average is for group *c*, in which the lesions were chiefly destructive. If, instead of averages, one considers distributions, it is found that there are significant differences between the groups. It is well known that in normal persons the calcium content of the serum is constant. In our series more than three fourths of the readings were between 10 and 10.9 mg. per hundred cubic centimeters. Only a single determination was below 10 mg. Of the total, 22.2 per cent were 11 mg. or above. A much wider range was encountered in the three groups with bone disease. It is particularly striking that of the patients with carcinoma of the breast metastatic to bone 40.4 per cent had serum calcium readings of 11 mg. or above. In contrast to this, in the group of patients with carcinoma of the breast not involving bone the deviations from normal were small. We conclude from these figures that the mechanism for regulating serum calcium levels is disturbed in osteitis

deformans and in several types of metastatic disease of the bone. The changes are most noticeable in the presence of skeletal metastases from breast carcinoma but are not specific for this condition. There is no clear-cut evidence that they appear prior to the onset of bone involvement as they would if due to pre-existing endocrine abnormality.

Finally we may mention a case reported to us through the courtesy of Dr. Norman Treves of this hospital. The patient was a girl aged 14 years who had a neurocytoma which had caused widespread destructive bone lesions. The serum inorganic phosphorus was in the upper normal range and the serum calcium was noticeably elevated, fluctuating between 13.6 and 19.4 mg. per hundred cubic centimeters. At autopsy extensive disease of the bones and soft parts was found. The urinary tract was full of calcific deposits. The adrenals, thyroid and parathyroids were essentially normal, and only the serosa of the uterus and ovaries was involved. This patient's cancer did not originate in the breast and there was no evidence that it had had any direct effect on the sex or parathyroid hormones. It appears likely, therefore, that the high serum calcium was due simply to a flooding of the circulation with the products of osteolysis. Yet the blood chemical abnormalities closely parallel those which occur spontaneously in patients with carcinoma of the breast metastatic to bone or which may be produced in them by administration of sex hormones.

CONCLUSION

In 3 cases of carcinoma of the breast metastatic to bone injections of testosterone propionate were followed by a decided rise in the concentration of calcium in the serum and in the excretion of calcium in the urine. In 2 of these cases similar changes also followed injections of estrone. The chemical changes were accompanied by clinical and roentgenographic evidence of increased activity of the metastatic disease in the bones.

In 2 cases of carcinoma of the breast without skeletal metastases injections of testosterone, estrone or progesterone were not followed by significant changes in the serum calcium levels.

A study of 130 cases of cancer metastatic to bone showed numerous spontaneous disturbances in the serum calcium levels. The changes were most frequent when the breast was the site of the primary tumor but occurred also in the presence of skeletal metastases from cancer of other organs.

The ability of testosterone and estrone to cause hypercalcemia in patients with carcinoma of the breast metastatic to bone appears to be due to a stimulation by these hormones of the growth of the metastatic tumor. This in turn causes an acceleration in the rate of bone destruction accompanied by a flooding of the circulation by the products of osteolysis.

The evidence demonstrated here that testosterone in large doses exerts a stimulating rather than an inhibiting effect on the growth of metastatic mammary carcinoma obviously contraindicates its use in the treatment of this disease.

The reason why an androgenic substance stimulates a tumor of a female reproductive organ remains obscure and merits further study.

444 East Sixty-Eighth Street.

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MANAGEMENT OF BURNS IN
CHILDRENAN ANALYTIC STUDY OF TWO HUNDRED
AND FIFTY CASES

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CINCINNATI

It is generally conceded that the systemic treatment and management of patients with a serious or extensive burn is just as important as the local therapy, if not more so. This is because much has been learned, especially during the past decade, through clearer concepts of supportive treatment. Although any recognized form of local therapy may be used, provided it is carried out properly, one may safely say that it is the systemic or supportive treatment that saves the patient or, to say the least, enhances the recovery.

The advocates of the various forms of local therapy should and in most cases do accept the foregoing statement as axiomatic; those who do not share in this view or are unwilling to accept it are not facing the facts presented to them after many years of evaluation. To laud a certain form of local therapy in a case of serious burn and to attribute the recovery to the local approach alone should cause one to accept the statement with a grain of salt.

It is not within the scope of this paper to discuss the importance of laboratory procedures in determining the status of the burned patient. However, it is only after the proper management and adequate amount of systemic or supportive treatment have been instituted to combat shock, toxemia and other complications that one has the right to evaluate the various forms of local therapy. I am fully cognizant of this point in presenting this paper, which deals only with local management.

It must be emphasized that there is a vast difference in the texture and thickness of the skin of adults from that of infants or young children. The cutaneous layers in the latter are not well developed; the stratum corneum and other layers of the epidermis are thin, and the corium, or true skin, not only shows a relative thinness but is poorly supported with connective and fatty tissues. As compared with adult skin, it offers a meager resistance to trauma or insult such as a burn. For this reason, heat of the intensity which produces a first or second degree burn in an adult will, in the majority of instances, produce a third degree burn in an infant or young child.

By third degree I mean involvement of the corium or deeper tissues and structures. With children, so often what appears to be a relatively superficial burn at first proves to be much deeper, even third degree, a few days or a week later.

This is especially true of burns caused by fire. One is impressed by the relative dryness and seared appearance of the skin of most patients burned by fire when they are seen shortly after the accident. This is because the intensity of the fire remains the same as long as it comes in contact with the integument and results in a rapid and deep cooking of the tissues. If the patient survives, after a week or ten days one sees or can

visualize for the first time the actual depth of involvement; at this time the tissues begin to slough and beginning restoration of the deeper structures takes place. Pyogenic infection, when present, is also more noticeable at this stage.

Scalds, on the other hand, are more superficial as a rule, and the burned areas show greater bullous formation, with more of inflammatory reaction. I therefore believe, and this is contrary to the general belief, that fire burns as a rule are deeper and more serious than scalds. The statistics presented in this article will, I think, support my contention.

In an analytic study of this question on 250 burned infants and children, I present what I believe to be some facts and statistics not previously recorded in similar fashion. I shall discuss the comparative results of the following methods: the use of crust formers or coagulants, the use of wet dressings with antiseptic solutions, the compression or closed method and the tubbing procedure. No case is included in which less than 10 per cent of the skin area was involved.

The series comprises 145 (58 per cent) white and 105 (42 per cent) Negro infants and children admitted to the Cincinnati General Hospital during the five years from Jan. 1, 1936 to Jan. 1, 1941. The ages ranged from 2 months to 12 years, and boys predominated (53 to 47 per cent). Of the patients, 13.2 per cent were 1 year of age or under, 50 per cent were 2 to 4 years, 18 per cent were 5 to 7 years and 18.8 per cent were 8 to 12 years.

Seventy (28 per cent) were burned by fire and 180 (72 per cent) were scalded. For the fire burns, open fire grates, explosions and matches were the chief causes (90 per cent); for the scalds, hot water and coffee topped the list (78 per cent).

Irrespective of the type of local therapy, the average period of hospitalization for the group with fire burns was fifty-five days (table 1). This included the cases in which grafting of skin was performed. The inclusion necessarily raised the average stay considerably, the average time prior to grafting being twenty-eight days. The average for the scald group was only eighteen days, or one third that for the fire group.

An analysis shows that 30 per cent of all the patients had some form of involvement of the leg, and these alone required an average stay of fifty-eight days. The patients with fire burns stayed ninety days, on the average, and those with scalds twenty-six days. Therefore, the patients with fire burns of the leg required three and a half times as much time as those with scalds of the leg. Again grafting played an important part in raising the average time in the hospital of the patients burned with fire, as forty-five days were consumed before the graft procedure. No other group of patients, considering the areas involved, required such a long hospitalization period.

The temperature curve (chart 1) shows that it required an average of six days for a normal level to be reached and maintained in the scald cases, while ten days were required in the fire cases, over half again as long. Also, a higher peak throughout was maintained in the fire cases. This is probably based on the fact, as previously stated, that the trauma sustained by fire was deeper and resulted in greater sloughing and infections.

Drs. E. A. Glicklich and A. B. Henningsen assisted in compiling the statistics.

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Read before the Section on Pediatrics at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

Thirty-three (13.2 per cent) patients 1 year of age and under had an average stay in the hospital of but seventeen days. This is due to the fact that nearly all had scalds; areas and depths were not so great and, although the vast majority required general or supportive treatment, an adjustment was noted within a few days.

A different picture was noted in the 2 to 4 year group of 125 patients (50 per cent), in which an average stay of thirty-five days was required. In this group were noted most of the cases in which there was involvement of 25 per cent or more of the skin area and which presented the most serious problems.

In the 5 to 7 year group the 45 children had an average stay of thirty-four days, while the 47 children in the 8 to 12 year group had an average of thirty-three hospital days. In this analysis the shortest hospitalization periods are found at the two extremes of the age groups, the youngest and the oldest, with the longest period given to the children ranging from 2 to 4 years.

There is no doubt that delay in administering any form of therapy plays a role in increasing the hospital stay of these patients. The longer the interval between the accident and hospitalization the more serious the prognosis. Also, the earlier the proper aid, the less the infections encountered. Our records reveal that 18 per cent of all patients were admitted to the hospital within one hour after being burned, 40 per cent were admitted from one to two hours after being burned and 42 per cent were admitted after three or more hours had elapsed. Eighty per cent of the wounds of those admitted after a lapse of twelve or more hours either were infected or became infected shortly afterward, and the hospital stay was increased by several days. This emphasizes the importance of instituting not only supportive but also local therapy as early as possible and deals with the proper education of the public along these lines to get the burned victim hospitalized as soon as possible.

Secondary infection or contamination of wounds was twice as frequent in the burns in which home remedies and improper local applications had been used prior to hospitalization. Almost half (48 per cent) of all the patients were given some form of local therapy prior to admission.

Just to list some of the absurd applications, as found in my records, I mention oils of all kinds, lard in combination with soap, sulfur and butter, wash bluing, coal oil, soot and axle grease. It is well established that grease and oil, unless they have some strong antiseptic properties, pave the way for infections and are therefore a hindrance rather than beneficial, even though, when originally applied, the soothing effect may have seemed indicated.

WET DRESSINGS

Forty patients (16 per cent) were treated with continuous wet dressings after a thorough débridement of the bullae and loose tissue. Weak Burow's solution (not stronger than 1 part to 50 of physiologic solution of sodium chloride) or, if infected, Burow's bichloride solution was used in the majority of instances. Most of these patients presented involvement of the scalp, face or neck which, for obvious reasons, was not suitable for other types of therapy. If this procedure is followed,

soft cotton, muslin or linen cloth should be used and should replace gauze or any wide meshed covering in order to prevent, or hold to a minimum, the adherence of the dressing to the wound. As a rule, burns of the face and neck heal rather rapidly and this method should prove efficacious in the vast majority of cases provided care is exercised early to avoid contractures. Even scalp burns manifest rapid improvement if care is taken to shave the head and hold down secondary contaminants. Wet dressings are indicated also when the genitalia are involved and for superficial burns of other parts. In clean wounds, the dressings need not be changed oftener than every twelve to fifteen hours provided they are kept wet continuously. After a few days to a week one may change to a mild salve such as 5 per cent boric acid ointment or, if there is evidence of any secondary infection, to a 2 to 3 per cent ammo-

TABLE 1.—Hospitalization Averages

	Cases	Per Cent	Days
Grand average.....	230	100	37
Fire cases only.....	70	28	55
Scalds only.....	180	72	18
1 year and under.....	33	13.2	17
2 to 4 years.....	125	50	35
5 to 7 years.....	45	18	34
8 to 12 years.....	47	18.8	33
Leg involvement.....	75	30	58
Leg involvement (fire).....	23	9.2	90
Leg involvement (scalds).....	52	20.8	26
25% or more involvement (recovered).....	32	13.6	65
25% or more involvement (fire).....	14	6	88
25% or more involvement (scalds).....	18	7.6	42
Method of Treatment			
Wet dressings.....	40	16	19
Fire.....	14	35	24
Scalds.....	26	65	14
Crusting.....	50	20	22
Fire.....	17	34	26
Scalds.....	33	66	18
Tubbing.....	140	56	41
Fire.....	34	24.3	70
Scalds.....	106	75.7	18
Compression.....	20	8	43
Fire.....	5	25	86
Scalds.....	15	75	30

niated mercury ointment, or a combination of dilute Burow's solution and 1 per cent acetic acid solution will usually give the desired end result.

The average hospital stay of all patients who were treated with wet dressings was nineteen days; that for fire burns was twenty-four days and that for scalds fourteen days—ten days longer for the fire burns (table 1). This group reached its temperature peak on the second day (chart 2) and the normal range on the seventh day.

At this point something should be mentioned about débridements. I believe that all blisters should be opened and all the loose tissue removed as soon as possible. It is not enough merely to drain or aspirate the bullae; all burned areas should be denuded and cleaned off well into the normal surrounding tissue, dry gauze sponges being used to cleanse the field, and débris should not be picked off piecemeal with forceps. On completion of this procedure, if done properly, the whole area will be smooth, without any tabs or irregularities

visible at the edges of the wounds. This will prevent other bullae from forming hours later; the chances for infection are reduced and healing will take place more rapidly. Also, on completion of a thorough débridement, one may visualize better the areas that are burned more deeply. The exact depth cannot be estimated at this time, but the deeper the involvement the more

charred, dull or bluish looking will be these areas; examination will give the operator an insight as to where most of the sloughing will later take place.

The amount of cleansing or scrubbing of the burned areas which have been denuded depends on the type of local therapy that is to be instituted.

If large areas have to be denuded, a general anesthetic should be employed; if less extensive, a narcotic may be used in slightly larger dosage than that which ordinarily would be employed for the age and size of the child. I have used the latter method in the majority of cases, the child cooperating in most instances, the discomfort being slight and the shock involved being no greater than, if as great as, that produced by general anesthesia, and certainly this method entails less danger of pneumonia. First the child is given a cleansing bath from head to foot; then thorough débridement is completed under the best surgical and aseptic conditions possible, followed with the warm wet dressings. Often too much time is employed in debriding the patient, and I cannot emphasize too strenuously that the whole procedure, as outlined, should be completed as quickly as possible, with the aid of several assistants.

CRUST FORMERS

The procedure that employs crust formers or coagulants, such as tannic acid alone, tannic acid in combination with silver nitrate or ointment bases, or solution of methylrosaniline solution alone or in combination, was used in 50 cases (20 per cent). For this group there was an average hospital stay of twenty-two days (table 1). The curve (chart 2) shows, on the average, that on the fifth day the return to normal temperature was effected, but a conspicuous rise is noticed the following day, the temperature returning to normal range on the tenth day.

Here a word of explanation should be given. I learned many years ago, in the early and experimental use of these coagulants, that not only certain areas but also certain types of burns contraindicated their use. At least I found that a great number of the crust-covered areas became infected in spite of the thorough débridement and strict asepsis. I learned also that the greatest number of infections occurred in the deeper or third degree areas. Most of this could be explained by the fact that third degree involvement could not go on to proper healing or restoration without a sloughing of the burned or devitalized tissue in that area. Completely burned or dead tissue, by virtue of its gangrenous

nature, is a good culture medium for pyogenic organisms. Even a mild split or separation in the crust could pave the way for a similar picture, and when an infection becomes manifest diverse ways and means must be employed to counteract it. If the infection cannot be controlled at its original site, other areas beneath the crust become involved by extension, with the result that the crust must be removed. Most of the infections in this series became manifest about the seventh day, hence the rise in the temperature curve on the sixth. Also, I soon learned the fallacy of applying tannic acid or methylrosaniline to the scalp, face, fingers, toes and genitalia.

I think that there is a strong need and many good indications for the employment of the crust-forming procedure, and, like wet dressings, it should not be condemned when and where properly utilized. For this reason the vast majority of cases in which this procedure was used were those of relatively superficial burns which involved chiefly the trunk and which were caused by hot liquids or vapor in 66 per cent as against fire burns in 34 per cent. When the average hospital stay of twenty-two days in these cases is broken down, it is found that those caused by fire require twenty-six days in comparison with only eighteen days for the scalds. Here again it is found that fire played the greater role.

The question arises as to what procedure to employ when a minimum of 40 to 50 per cent of the body surface is involved. In such cases, of course, the prognosis in almost every instance is a very poor one, but occasionally the child pulls through. On these children who are extremely sick and who will hover between life and death for days, sometimes weeks, I believe that one is justified in using the coagulation or crust-forming method, because the patient should be kept at absolute rest while supportive treatment and careful nursing are pushed to the limit, and this regimen the crust formers certainly permit. I believe that just such a procedure may be instrumental in carrying the patient through the early stormy and extremely dangerous period. If wound infections or other complications arise, they may be met at that time. I believe that many lives have been spared by this arrangement; I have encountered at least a dozen such cases. In 1 case 65 per cent of the integument was involved.

TUBBING

The tubing procedure was used in 140 cases (56 per cent). This constitutes the largest group of the four

methods compared and evaluated. In this group there were 106 (75.7 per cent) scalds and 34 (24.3 per cent) fire burns. The hospital stay for the entire group averaged forty-four days, which when broken down reveals that eighteen days were required for the scalds and seventy days for the fire burns (table 1). At first glance this would appear as a startling figure for the fire burns, but it was in this group that most of the

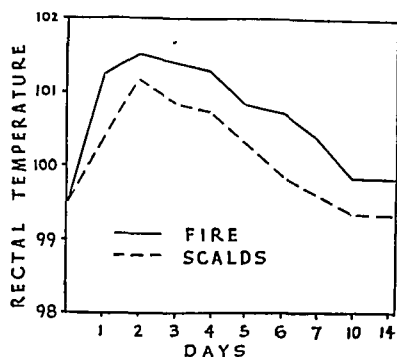


Chart 1.—Comparative temperature curves according to cause of burn.

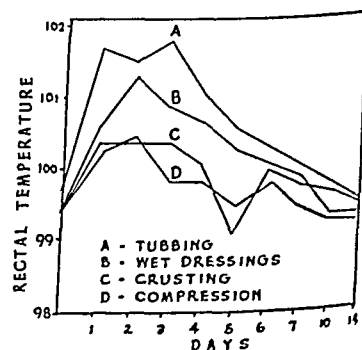


Chart 2.—Comparative temperature curves for different methods of therapy.

cases involving the leg were included. As mentioned previously, the group in which the leg was involved had a grand average of fifty-eight hospital days, with ninety days required for the fire burns of the leg which called for grafting.

In my experience, it has always taken longer for burns involving the leg to heal, and especially is this true when the popliteal space and areas below the knee are involved. It would appear as though this holds true, generally speaking, for the majority of injuries or surgical interventions other than burns involving these areas. For want of some other explanation I have always considered this to be due to a circulatory discrepancy and not to local therapy.

The temperature curve (chart 2) for the cases in which the tubing procedure was employed shows a sharp rise within twenty-four hours, a slight drop on the second day and then a rise to its peak on the third day, from which time there is a steady decline, requiring ten days, however, to fall and remain within the normal range.

The tubing procedure should be classified as a combined method. It has been described in detail in a previous publication.¹

This method has several advantages. The water bath is well tolerated, the wounds and especially the sloughing areas are kept cleaner, relaxation from muscle tension and spasm is afforded after a few minutes and mild exercises of the involved members may be encouraged and started earlier. Contractures may be prevented in the majority of cases, and by not interfering with the granulation tissue the wounds heal rather rapidly or are prepared earlier for grafting. Here again, in an extreme or extensive case, or one of borderline involvement, after the original cleansing bath and débridement the patient may remain in bed for two or three days before the tubing procedure is instituted, the wet dressing method being enforced in the interim.

The tubing method is indicated when the trunk is involved, and especially the genitalia, or when a combination of the trunk and other areas are involved. It is an ideal method when the hands or feet are involved, and at this point I wish to emphasize the use of the continuous water bath when the hands or feet alone are burned. With specially constructed metal fixtures in the form of boots for the feet and long troughs for the forearms and hands, the involved members are submerged for hours at a time, resort being made to wet dressings between dippings. I have observed 2 cases in which, with the water bath alone, spontaneous amputation of one or more toes occurred after a deep burn of the foot in which gangrene had developed.

The aqueous solution of soft soap, if properly made, is nonirritating, and at no time have I encountered a dermatitis or irritation directly attributed to the soap.

COMPRESSION

The compression or closed method offers another approach in the local management of burns. This work is best done in the operating room, where the débridement and thorough scrubbing of the wounds are carried out under general anesthesia, as a rule, and aseptic

technic can be best enforced. The complete multiple dressing, in which sea sponges are embodied, is kept intact for from twelve to fourteen days, after which time the wounds are inspected for healing, infection and sloughing; experience and personal equation being the guiding points for further therapy, grafting or nothing at all, as the case may be. If care is exercised in not getting the compression too great, this method has many advantages. It is based on sound rationale in that it keeps the involved areas at rest without disturbing the wounds, the patient for the most part is comparatively comfortable and the nursing care is reduced to a minimum. However, I feel that this procedure should be limited, in the majority of instances, to selected cases in which certain areas only are involved.

Most of my patients treated by the closed method had burns involving the leg or arm or both, and it is in this type of burn for which I believe this form of therapy is best indicated. For superficial burns of the

TABLE 2.—Complications, with Percentages

Complication	Number of Cases	Per Cent	Treatment				Type of Burn			
			Wet Dressing		Crust-ing		Tub-bing		Com-pression	
			Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Definite pyogenic infection	42	36.5	4	10.0	15	30.0	19	13.6	4	20.0
Acute upper respiratory infections	34	29.6	9	22.5	8	10.0	13	9.3	4	20.0
Scarlet fever.....	13	11.3	2	5.0	1	2.0	10	7.1	—	—
Pneumonia.....	11	9.6	2	5.0	2	4.0	6	4.3	1	5.0
Otitis media.....	6	5.2	—	—	2	4.0	4	2.9	—	—
Bronchitis.....	5	4.3	1	2.5	2	4.0	2	1.4	—	—
Diphtheria.....	3	2.6	1	2.5	1	2.0	1	0.7	—	—
Whooping cough..	1	0.9	1	2.5	—	—	—	—	1	1.4
Totals.....	115	100	20	30.0	31	62	55	39.3	9	45.0

extremities, excluding the hands and feet, I think that it offers one of the best solutions to the local therapy approach and it is not only amazing but very gratifying to see the well healed and smooth areas which are effected. However, no matter how carefully carried out, this procedure does not and cannot prevent sloughing in the deeper burns, for reasons previously given. Care must be exercised also in not making the pressure too great over the patella, as a pressure sore and slough may ensue in this poorly padded and superficially protected area.

After the removal of the compression bandage and when sloughing has taken place or still is taking place, it is obvious that further therapy is indicated before restoration can take place spontaneously or before aid can be given by grafting.

It is at this point that, on the removal of the compression bandage and in the face of considerable sloughing, infection or both, one may resort to the tubing method in order to expedite the removal of the slough, to counteracting of the infection and to prepare the part, if necessary, for grafting, solution of sodium hypochlorite or a similar solution being used to replace the wet dressings previously described.

1. Lavender, H. J.: Treatment and Management of Burn Cases, *Am. J. Surg.* 45: 534-538 (Sept.) 1939.

In my series, 20 cases (8 per cent) were treated by the closed method, and I had the good fortune to follow the work done on a similar number of cases in another hospital. The temperature curve (chart 2) shows the rapidity with which the fever was reduced in my group. The length of hospitalization averaged forty-three days—fifty-six for the fire burns and thirty for the scalds (table 1).

Complications in some form arose in 115 (46 per cent) of the cases. Definite secondary pyogenic infection headed the list, with 42 cases (36.5 per cent); acute infection of the upper respiratory tract was next with 34 cases (29.6 per cent); then scarlet fever with 13 (11.3 per cent), pneumonia with 11 (9.6 per cent), otitis media with 6 (5.2 per cent), bronchitis with 5 (4.3 per cent), diphtheria with 3 (2.6 per cent) and whooping cough with 1 (0.9 per cent). Table 2 gives this list. The fire burns showed by far the greater percentage of complications, while, as to method, the crust formers, wet dressings, compression method and tubbing procedure had the greatest percentage of complications in the order named. The percentages were based on the total number of patients treated by each method.

In 46 cases (19 per cent) what would be considered a severe hypertrophic or keloidal condition developed in one or more areas, and these required some special form of therapy for attempted reduction. Thirty of these cases, or more than 65 per cent, occurred in those children burned by fire and where, as a rule, deep sloughs of burned tissue played a role. Only 10 of these patients (4.2 per cent) required some form of orthopedic intervention.

It is well known that some persons are prone to have keloids, and often out of proportion to the amount of damage to the tissue, but certainly this tendency could not account for the large number of keloids presented in this series.

It has been suggested often that if a grafting procedure were to be instituted earlier there would be less chance for keloidal formation. This I would honestly question, for I have seen keloids develop in quite a few cases in which early grafting was done, and even after work done by the most careful and expert operators.

Regarding the time to graft brings up an interesting discussion. I think it is a wise procedure to permit for spontaneous grafting as a rule, because I feel that the results are equal to, if not better than, those in which intervention is instituted. Naturally there is no hard or fast rule as to the time element before grafting. However, in the handling of my patients, as long as there is any evidence of spontaneous healing, with a new island of epithelium appearing here or there, I permit nature to carry on as far as possible. One can usually determine the time to graft by the failure of new epithelial islands to appear, or the lack of extension or coalescence of the islands already evident. Then again a great deal depends not only on the depth of the sloughing areas but on the time necessarily required for the complete separation and removal of these sloughs.

Thirty-six patients (15.2 per cent) required grafting, and all survived. One patient had a homograft with

the father as donor, and the patient held the graft to the astonishing time of over six weeks.

There were 14 deaths, or 5.6 per cent. All the deaths occurred on or before the seventh day, with one exception, which occurred on the ninth day. In other words, every patient survived who lived to the tenth day. Of the 14 patients who died only 1 had an area involvement of less than 20 per cent, and 9 had a minimal involvement of 35 per cent. Only 1 was more than 4 years of age. One death was attributed to shock and occurred the next day after the burn; 8 were due to pneumonia, 3 to a septicemia, 1 to an embolism and 1 to erysipelas.

COMMENT AND CONCLUSIONS

I fully realize that to evaluate something one must compare similar or like conditions. This is obviously difficult to do when one is dealing with burns; however, in presenting the various forms of local therapy in the management of 250 burned infants and children, I wish to make the following general comment:

1. It is of prime importance to resort to systemic or supportive therapy before any form of local approach is considered, and the supportive treatment must be maintained throughout the local management.

2. Burns caused by fire are of greater intensity and usually manifest themselves as third degree involvement. They require greater care and longer hospitalization than scalds, irrespective of the type of local therapy.

3. According to age grouping, infants 1 year and under have the shortest convalescent period, owing to the fact that the majority of injuries are by scalding. Children 2 to 4 years of age present the most serious problems and have the longest hospitalization period. According to location, cases in which there is involvement of the leg require the longest convalescent period.

4. The greater the lapse in time before proper local therapy is instituted the greater the number of infected wounds and the greater the stay in the hospital. "Home remedies" also are a detriment.

5. Débridements should be thorough and complete, aseptic technic being used in all cases.

6. Sloughing of the deep and devitalized burned tissue is part of the natural body defense and cannot be prevented, no matter what type of local therapy is instituted.

7. In spite of condemnation by many workers, wet dressings have their place in therapy for burns; likewise the crust formers, the tubbing method and the compression procedure. Combinations of the methods may and should be used to enhance the desired end result.

8. Secondary infection and irregular sloughing play important roles in causing hypertrophic tissue and keloid formation. Secondary pyogenic infection heads the list of complications, while acute infection of the upper respiratory tract is second.

9. Spontaneous healing should be permitted and encouraged before resort is had to grafting.

10. In a series of 250 burned infants and children, every one survived who lived to the tenth day. There were 14 (5.6 per cent) deaths, with pneumonia topping the list of contributory causes.

One learns by trial and error. Only by facing the facts, being open minded and using logic can one hope to evaluate properly the different forms of therapy. Certain it is that each case presents a problem unto itself, and it is only through experience in the treatment of a great number of burns that personal equation will, as a rule, direct the proper local approach in a given case. I wish to think of it as a selective form of approach and management, taking into consideration the extent, depth and location of the injury, and whether the burn was caused by fire or by scalding.

Then again, perhaps the saying "I treated him, but the Lord saved him," should be given more than secondary consideration.

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ABSTRACT OF DISCUSSION

DR. R. H. ALDRICH, Boston: At the Boston City Hospital we average between one hundred and sixty-five and two hundred and twenty-five large burns a year. From 1930 through 1934 our method of choice was the use of a 2 per cent aqueous solution of methylosaniline. In 1934 we modified our treatment, having found that methylosaniline is not a specific antiseptic against the gram-negative organisms. The modification consisted of combining methylosaniline with brilliant green and acriflavine base. This is the so-called triple dye. In his series Dr. Lavender did not lose a burned patient who lived longer than ten days. This is a most important point, as most of the burned patients dying after ten days die of infection. My conception of a burn is that it is a large open surgical lesion usually infected with one of the streptococci. I feel that with the dye treatment, especially with the triple dyes, there is an opportunity to cut infection down to the minimum. Some of the patients of course may be lost as the result of complications such as pneumonia, and patients who have suffered burns involving over 75 per cent of the body area will usually be lost. However, if every burn is considered a potentially infected lesion and treated as such the mortality will be reduced. We do not use the tub treatment. This was stopped many years ago because of the stormy courses that tubbed patients had. The early care of shock is one of the essentials in reducing mortality. I feel that every patient with a burn of 20 per cent of the body area or more should be considered a shock patient and treated as such until it is obvious that he is out of shock or will not go into it. If we are to lower the mortality to the minimum we must stop losing burned patients during the first three days. Once the patient is out of shock, which I attempt to combat by the usual methods of heat, rest and fluids, including saline solution, dextrose, whole blood and plasma, my technic is simple. If the burned area has not been treated with an oil or a salve my débridement consists of taking off only the loose shreds of skin and excising the bleb. I use a 2.5 per cent aqueous solution of the mixture of three dyes, putting on one coat as fast as the previous one has dried. After six or seven coats a flexible eschar is formed, and this, unlike the tannic acid, will not hide infection. It is soluble and will become moist and soft if any pus is under it. If this should happen I elevate the eschar with a pair of tissue forceps, trim it away with a pair of scissors, pat the underlying area with a dry, sterile sponge, and respray. This procedure goes on until new epithelium spreads through the burned area or until the tissues show evidence that they will accept skin grafting.

DR. ADALBERT G. BETTMAN, Portland, Ore.: I agree with most of the statements Dr. Lavender has made; however, I prefer to keep the dressings dry until healing is completed. The treatment of burns resolves itself into the treatment of shock (stopping loss of fluids from edema and weeping and

fixing toxins) and later healing the wound. Heretofore I have tried to heal the wound as the patient was going into shock. Forty per cent of the total fluid shift takes place in the first hour and 60 per cent of the deaths occur in the first twenty-four hours. These are significant statements. Therefore a treatment which requires more than an hour to become effective is to that extent inefficient. Three patients having over 80 per cent (one over 90) of their body surfaces burned have been saved. Albuminuria and urinary suppression do not occur in patients who have not had grease or oil applied. Usually the surface is entirely healed when the coagulum comes away. Tannic acid and silver nitrate solutions seal the surface at once. Of more than 500 burned patients only 16 have been lost; 13 came either in severe shock or died of some condition not related to the burn. The treatment is as follows: A narcotic is given and fluids started, 1,000 cc. for every 25 pounds every twenty-four hours, increased or decreased according to hemoglobin readings. Grease or oil, when present, is removed with ether. Freshly made 5 per cent tannic acid solution is applied followed by 10 per cent silver nitrate. Applications with cotton swabs are best, giving no peripheral ring of moisture the next day. The patient is then placed in a tent heated by electric lights and the surface dried and kept dry (without cold drafts). The coagulum gradually comes away or is removed, at which time most burns are entirely healed. Unhealed areas are epithelized with oxyquinoline sulfate scarlet red gauze. Skin grafting is rarely needed. The average time for recovery is from three to four weeks. Often the skin peels off as a glove, but no fingers or other members have been lost since this treatment has been employed. The solutions are applied to the face as to other parts with the same gratifying results.

DR. H. JERRY LAVENDER, Cincinnati: I agree that the constitutional treatment comes first, and I think it will be recalled that I mentioned that in the premise of my paper. Drs. Aldrich and Bettman haven't agreed with everything I mentioned; therefore I might take two or three exceptions also. I am not against tannic acid or any of the crust formers. I think they have their place, but I think the indications are definitely limited. For scalds they play a marvelous role, but I think they are contraindicated in the types that we know definitely are going to slough. I make that unqualified statement. Otherwise I think there are decided indications for their use. A word regarding homografts: There was 1 case in particular in which a homograft was used from the father. The graft held to the astonishing time of six weeks. As far as I know, that is the longest time on record. We thought perhaps we were going to have, for the first time in medical records, a case in which a homograft was going to hold. We watched it for a long time, and finally at the beginning of six weeks it began to disappear, as all homografts do.

Typhoid Vaccination in the Army.—The use of typhoid vaccine as a protective measure was introduced in the Army, on a voluntary basis, in March 1909, and during that year less than one thousand individuals were protected. This voluntary system was continued through 1910, and by the end of that year approximately 15 per cent of Army personnel had been protected. In March 1911 a division of troops was mobilized in Texas, and for the first time the use of typhoid vaccine was made compulsory for all troops (fifteen thousand) serving in that area. The results obtained in the prevention of typhoid were most excellent. On Sept. 30, 1911 the use of typhoid vaccine as a protective measure for all military personnel was made mandatory, and by the end of that year approximately 85 per cent of all military personnel had been protected. It is evident from the foregoing statements that the full effects of this protective measure did not begin to appear until about 1912. —Immunization to Typhoid Fever: From the Research Laboratories of the Army Medical School, Washington, D. C., Johns Hopkins Press, Baltimore, 1941.

ROENTGEN DIAGNOSIS OF THE PRIMARY TUBERCULOUS INFECTION

C. C. BIRKELO, M.D.

DETROIT

Our present knowledge of the first infection with tuberculosis is the result of a careful correlation of postmortem findings, much animal experimentation and repeated roentgen examinations. Briefly, it may be said that the desire to understand fully this perplexing problem has persuaded all physicians interested in tuberculosis to combine their efforts to the extent that we are now able to say that we have a fairly accurate understanding of the entire primary complex as it occurs in both the child and the adult.

It is a little less than twenty years ago since our knowledge of the tuberculous infection, as it occurred in the child, was so meager and uncertain that the clinician looked on the roentgen examination as only one link in a chain of evidence necessary to decide whether or not the child had tuberculosis. We knew then, as we do now, that the first infection with tuberculosis occurred in the child in the majority of instances. We also knew that the calcium deposits often found in a child's lungs were indications of a tuberculous involvement, and much time and concern were devoted to the finding of such deposits. When they were found, open air schools, summer camps and restricted activities were prescribed for such children. As time went on and we all gained experience, it soon became well known that the first infection with tuberculosis was relatively benign in the majority of instances and that this phase often existed and passed without either the family physician or members of the family becoming aware of its existence.

Since the first infection with tuberculosis was most commonly found in children, it was decided by the National Tuberculosis Association that the first infection should be called the childhood type of tuberculosis and that the later infection, most often found in the adult, should be named the adult type of tuberculosis.

Many objections were made to the term childhood tuberculosis because it was not infrequently found in the adult and especially the young adult. In the 1940 edition of Diagnostic Standards, published by the National Tuberculosis Association, the name childhood type has been changed to the primary phase of tuberculosis, and similarly the adult type is now called the reinfection phase of tuberculosis. In this discussion the names used in the last edition of Diagnostic Standards will be used.

In the primary tuberculous process the method of infection is commonly through the inhalation of the tubercle bacilli into the lung. Occasionally it develops in the gastrointestinal tract through ingestion of infected material. More rarely this infection takes place through the cutaneous route by introducing infected material into a wound or an abrasion.

The first site of this infection in the lungs is the alveolar spaces, which soon become filled with phagocytes, and small areas of consolidation are formed. How many tubercle bacilli are necessary to produce this infection we do not know, but it is known that when they do gain entrance in sufficient numbers to cause infec-

tion they multiply very rapidly and the infection soon extends along the lymphatic channels into the regional lymph nodes. During this period the bacilli grow freely and without much interference. Soon a sensitivity toward the tubercle bacillus develops in the body and an attempt to focalize and limit the infection does occur. Dr. Woodruff has shown by animal experiments that this focalizing begins in from seven to ten days after the introduction of the bacilli. It is because of this sensitivity that we are able to obtain the tuberculin reaction. The permanence of a positive tuberculin test is a disputed question, but it is believed that when the test is permanently positive nearly continuous stimulation has existed. It is however known that, if the primary lesion heals completely, the tuberculin test may again become negative.

During the early stages of the infection there are no symptoms from the primary phase, but with the development of sensitivity a mild fever may occur which passes unnoticed except in a few instances when the infection has invaded a large area of the lung before it has become limited. The parenchymal lesion, when small, will soon become invisible in the roentgenogram, but when it is

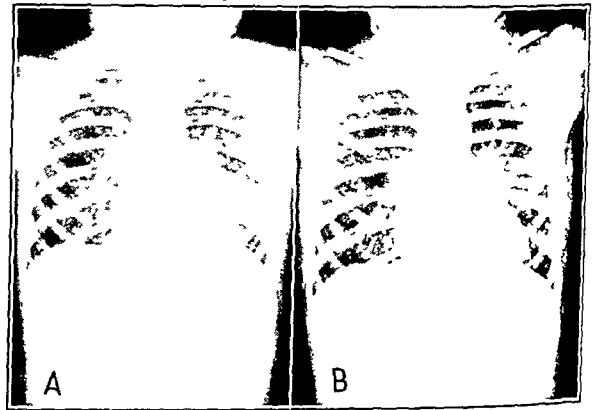


Fig. 1.—A, typical primary infection with parenchymal infiltration and lymph node enlargement. B, appearance eight months later; calcium deposits shown in both the parenchymal lesion and the lymph node.

large many months may be required before it clears. Whether large or small, these lesions often cascade and, when caseation occurs, calcium deposits are common. This deposition of calcium was first described by Gohn and has since been called the Ghon focus. This focus may be large or small, depending on the extent of the caseating process.

It has previously been stated that from the parenchymal primary lesion there is a rapid spread or drainage along the lymph channels into the regional lymph nodes. This pathway along the lymphatic channels also suffers some damage from the infection and, when healing has taken place, we find narrow strands of fibrosis along the course of these lymphatics, which often remain for a long time and are frequently visualized in a roentgenogram.

The primary infection is more often discovered only because of lymph node enlargement. In the majority of instances these nodes are large, and more than one group of nodes may be involved by extension through communicating lymphatic channels. Occasionally bilateral node enlargement may be found because of such extension.

When the primary infection recedes, these lymph nodes gradually become smaller, but calcium deposition

is very common in such nodes and extensive deposits may be found, again depending on the extent of caseation.

The lymph nodes not infrequently become so much enlarged that they may occlude a large main stem bronchus and cause an atelectasis. They may also ulcerate or rupture into a bronchus and cause a canalicular dissemination into the lungs on either side. When this occurs, the behavior of the resulting lesions will be the same as in reinfection tuberculosis. The primary nodes may also rupture into the circulation. If it happens to be into a pulmonary artery, the lesser circulation may filter out most of this infection and confine the spread to the lungs; but, if the rupture occurs into some pulmonary vein, hematogenous infection may occur in many organs of the body and meningeal involvement is nearly always fatal. Bone and joint tuberculosis as well as genitourinary involvement is often the result of such accidents.

Such complications should be regarded as accidental happenings, and they are sometimes spoken of as secondary stages of the tuberculous infection. In the majority of cases they do not occur, but one often finds a small parenchymal calcium deposit in the lung and a larger calcium deposit in the neighboring lymph nodes and they are spoken of as results of the primary complex. These evidences of the primary complex may remain for many years and often through the entire life span of the patient.

The primary infection also occasionally occurs in the adult, and I have seen many such cases; their behavior has been the same as in the child. There are some who describe both an anatomic and a clinical difference in the behavior of this lesion in the adult as compared with the child. This is contrary to my experience; but, if it should occasionally appear that a more severe infection has resulted, it is likely that one of the conditions previously mentioned as not uncommon accidental happenings has occurred, as it is known that they occur also in the child.

Sometimes an apparent repetition of the primary tuberculous infection occurs in the same individual. My associates and I have found only 4 such cases, so the condition is very rare. Their behavior was the same in the recurring episode as in their first infection.

This preliminary explanation of anatomic characteristics of the primary infection has been given so as better to understand and appreciate the roentgen findings in a primary tuberculous involvement. In the living person the roentgen examination is often the only method by which one can definitely state that a patient either has or has had such an infection.

The common practice of making roentgenograms of all tuberculosis contacts has made it possible to find the very early primary parenchymal infiltration and to observe its behavior. It has also been possible by serial roentgenograms to correlate symptoms and clinical findings throughout the entire cycle of the primary complex in many instances. Sometimes we have been able to observe the time period from definite exposure to tuberculosis to the first appearance of the primary complex as seen in the roentgenogram. This period is sometimes spoken of as the incubation period and varies from three to eight weeks.

The first roentgen findings of the very early primary lesion, found in the majority of cases, consists of a small area of consolidation in the parenchyma of either lung. The most common location of this lesion appears to be at the middle or basal portions of either lung, but they may also be found at the apexes. In the reinfection type of tuberculosis the upper half of either lung is by far the most common site, and purely basal lesions in this type of the disease occur in about 2 per cent of cases.

There are however, many other disease conditions which produce small and large parenchymal consolidated areas at either the middle or the basal portions of one or both lungs, so the parenchymal lesion is not by itself diagnostic; but when small or large parenchymal infiltrations are found with the regional lymph nodes definitely enlarged, one has the so-called primary complex and a diagnosis can usually be made. More often the parenchymal infiltration has disappeared at the time of the roentgen examination and only a lymph node enlargement is found.

One or more groups of enlarged nodes may be found but they are commonly unilateral. As previously mentioned, an extension may occur to the nodes on the contralateral side, and when this happens Hodgkin's disease has to be thought of and ruled out.

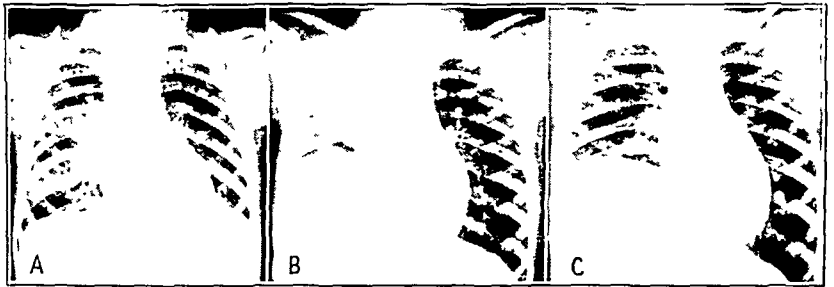


Fig. 2.—A, massive parenchymal infiltration in primary lesion, March 26, 1936; B, bronchial obstruction and atelectasis, April 21, 1937; C, the end result Nov. 30, 1938.

The roentgen appearance of the tuberculous lymph nodes is rather characteristic in this respect: they are often extensively enlarged and out of proportion to clinical findings and symptoms. This finding is so common that it is a mistake to mention adenopathy unless the nodes are clearly seen in a well made roentgenogram. Careless description of uncertain findings will always invite differences of opinion by different observers and confuse the clinician whom we are anxious to help with expert opinion. It is true that there are small nodes and borderline cases in which there is some doubt about visible nodes. In such instances it is our duty to examine further and, if necessary, allow a few weeks to pass and again examine the chest with such roentgenograms as are necessary—such as oblique and lateral projections.

DIFFERENTIAL DIAGNOSIS

In the majority of instances the diagnosis of a primary tuberculous infection can be made from a good roentgenogram. There are, however, a few pulmonary diseases which may produce similar roentgen findings; namely, a parenchymal infiltration with regional lymph node enlargement. This often happens in bronchopneumonia in children, complicating some contagious disease, such as whooping cough. From the roentgenogram alone it may not be possible to rule out pneumonia entirely, but there is usually this difference, that

the lymph nodes occasionally visualized with a pneumonic process are much smaller than those found in the primary infection of tuberculosis. If there is an opportunity to reexamine in a week or ten days, one will find that the pneumonic process has either cleared or formed an abscess. The lymph node enlargement which occurred with a pneumonic process will usually disappear from the roentgenogram at the same time at which the resolution of the pneumonic process occurs.

Clinical and laboratory findings should also be obtained and are always very helpful. The sudden onset of pneumonia and the high fever with a high leukocyte count are often sufficient to differentiate the two conditions. Elevation of temperature in a primary tuberculous process will usually mean complications, such as miliary infiltration or atelectasis from bronchial obstruction, but will not often be associated with leukocytosis.

Hodgkin's disease is often more difficult to differentiate from the primary lesion when the only roentgen evidence consists of lymph node enlargement. In Hodgkin's disease the lymph node enlargement is commonly bilateral and of nearly equal extent on the two

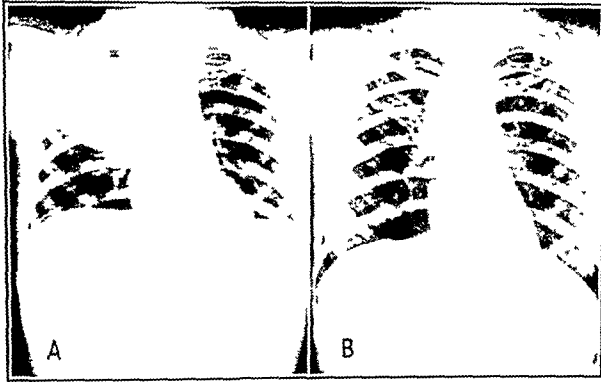


Fig. 3—A, primary lesion with bronchial obstruction and atelectasis, Jan. 12, 1938, B, scar from parenchymal focus visible, Nov. 5, 1940.

sides. They are also often extensive and progress rather than retrogress, so that in the roentgenogram of Hodgkin's disease the mediastinal border has a scalloped appearance. In the primary tuberculous lesions the nodes are more often unilateral and they commonly retrogress and become smaller after the parenchymal lesion has disappeared. If differentiations cannot be made from the roentgenogram, the patient with Hodgkin's disease will soon acquire generalized adenopathy, and biopsy will then be possible.

Few laboratory tests are of much value in differentiating the two conditions, but a tuberculin test should be made, and if it is negative it will be helpful. A differential blood count may occasionally help, but in itself it is not diagnostic. Reexamination with the roentgen ray is more informative, because in Hodgkin's disease there is often rapid extension and the tuberculous nodes commonly become smaller or retrogress.

LUNG ABSCESS

Lung abscesses are quite common in children and the young age groups and on a roentgenogram may resemble many other diseases, among them primary tuberculosis. In the child they are often the result of inhalation of foreign bodies. The opaque foreign body can often be found and should always be borne in mind and looked for. The nonopaque foreign body such as the peanut

is very common, and one variety will invariably produce an abscess. It nearly always produces bronchial obstruction and atelectasis and, when this finding is not very definite, inspiration and expiration films should be obtained and the change in air content of each lung and the shifting of the mediastinum will be noticed when bronchial obstruction is present. Lymph node enlargement is generally lacking in an abscess and very prominent in the tuberculous primary lesion. If there is an opportunity to observe the lesion and to obtain serial roentgenograms, the lung abscess will excavate in a very short time. The parenchymal lesion in primary tuberculosis nearly always becomes smaller, and excavation does not usually occur. Laboratory methods should be made use of; leukocytosis will frequently be found in an abscess and a normal count will be found in most cases of the primary tuberculous infection.

CYSTIC DISEASE

Cystic degeneration occurs in the child as well as in the adult, but it ordinarily resembles fibrosis from a healed tuberculous process rather than an active primary infection. There are, however, symptoms such as hemoptysis with cough and expectoration which often brings them in for a roentgen examination. The outstanding roentgen finding is localized or generalized fibrosis with areas of rarefaction, sometimes resembling excavations. The location of the lesion in the lungs, like a lung abscess, may be anywhere, but there is rarely any lymph node enlargement, whereas in the primary infection the lymph nodes are unmistakably enlarged. In recent years we have found so many of these patients with cystic disease that we have learned to identify them from the roentgenogram, and the diagnosis can generally be arrived at by instilling iodized oil, which easily enters the cystic areas and then establishes the diagnosis.

BRONCHIECTASIS

The most common cause of hemoptysis in the child and young adult is bronchiectasis, and for this reason we have many of these cases reported to us for roentgen examination. They almost always give a history of repeated attacks of pneumonia and influenza, and whenever the common cold invades their family circle they are the ones who suffer the most. The colds will last for weeks in a bronchiectatic child, whereas a few days is the common course of this disease in the otherwise normal person. In bronchiectasis the x-ray findings are nearly always at the base of either lung. The bronchiectatic areas become infected often and the roentgen findings are then a mottled appearance at the base. These ordinarily do not produce any large areas of consolidation like the pneumonic infiltration but rather a scattered mottling with very small areas of consolidation. As the infection clears, these small areas of consolidation will also clear only to reappear with the next upper respiratory infection. Bronchiectasis is usually not associated with any lymph node enlargement. An instillation of iodized oil will nearly always establish the diagnosis, and the cylindric or sacular variety of bronchiectasis will be found, depending on the extent of the disease.

ATELECTASIS

Atelectasis indicates some bronchial obstruction and may occur as a result of foreign bodies or tumors within the bronchus or from contraction of scar tissue as the

result of ulceration within the bronchus. It may also be produced by pressure on the bronchus from without.

It is not uncommon to find that the lymph nodes in a primary tuberculous infection compress a main stem bronchus to the point of occlusion and cause a considerable area of atelectasis. The roentgen examination may not disclose the cause of such bronchial obstruction but it should record or suggest the possibility of atelectasis and describe lymph node enlargement when present and demonstrable. It will lead the way to further investigation, such as bronchoscopic examination which will often give positive information and may lead to removal of the obstruction and reestablishment of aeration through the atelectatic area.

Taylor and Hamilton avenues

ABSTRACT OF DISCUSSION

DR. FREDERICK SLYFIELD, Seattle. In the event that we look on what we have been accustomed to calling primary tuberculosis or the primary complex or childhood tuberculosis as clinical disease, are we to assume that every time we get a positive tuberculin test we must call that tuberculosis? In that event it seems to me that we are going to be in for a great deal of difficulty. I should like to have that point clarified.

DR. RALPH S. BROMER, Bryn Mawr, Pa. As a roentgenologist I regard the use of the oblique films as most important. They are of aid in demonstrating enlarged lymphatic nodes lying at the bifurcation of the trachea, the other nodes of the tracheobronchial group and also the paratracheal groups. I have found the latter frequently involved in postmortem examinations. In many cases of tuberculous meningitis enlarged nodes have not been demonstrated in films of the chest in the search for the primary focus because of failure to secure oblique films. In survey work in children, the single anteroposterior view frequently fails to demonstrate enlarged nodes, evidence of primary infection. It is sometimes possible to demonstrate in roentgenograms enlarged nodes and parenchymal involvement as part of the primary complex in patients who have a history of positive contact and also have a positive tuberculin reaction. But usually it is impossible to say in cases of moderate or extensive parenchymal involvement whether or not one is dealing with a primary infection or a reinfection.

DR. C. C. BIRKEL, Detroit. I am sorry that I did not take the time to read the entire paper, because in it I tried to explain the thing the clinician wants us to do. He wants us to describe what we see in the films that we make, and it does not make any difference how many films one wants to take in order to make the diagnosis. We do know that the first infection is nearly always in the lymph nodes. We know that these patients behave in a certain manner. They do not need any collapse therapy. If you take them away from the source of infection so that they don't live in an atmosphere of open contact with tuberculosis they do well without any other treatment. On the other hand, when one begins to see cavities one has to do something. It is then a question of therapy, and the clinician depends on x-ray men to decide whether it is primary or reinfection. They ask me those questions every day, and I try to answer them. Sometimes I can, sometimes I cannot. The National Tuberculosis Association has definite views as to terminology.

DR. HORTON R. CASPARIS, Nashville, Tenn. I am not criticizing Dr. Birkel for following that terminology. I am bringing up the question because I think eventually we all have to get away from that situation. I don't think it is quite fair to ask you to make that distinction. Clinicians too often ask the x-ray man to do everything for them. We have got to do this together. A good x-ray man is going to show us oblique films. Everything has got to be on an individual basis. We have got to have a series, we have got to have oblique films, we have got to have everything that radiologists can decide in any individual case. Regarding the question of calling everything tuberculosis I think that if one were able to

do autopsies on all those with positive tuberculin tests one would find active tuberculosis but not enough. Similarly, if one takes out any tonsils one always finds a pathologic condition in the tonsils but one doesn't call it tonsillitis. I would suggest that we make the differentiation and say we have tuberculous infection, and then with all the means at our disposal, if we think that infection is causing the patient enough trouble to necessitate our doing something about it, modifying in any way his behavior or his existence, we are treating and then we can call that tuberculosis. That would be a practical differentiation—infection, then tuberculosis. It is true that more tuberculous infection is seen in children, a greater incidence of certain types of tuberculous infection, probably, than in adults. But one often sees the same type in children that one sees in adults, and in adults certainly young adults, one sees the same type one sees in children. Tuberculous infection may come in these seizures and, as we go along, suddenly these persons become ill and we find some reason for it, then it is tuberculosis.

NECK PAIN

THE LAMINAGRAPH AS AN AID TO THE DIAGNOSIS OF ATLANTO-OCCIPITAL LESIONS

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Pain in the neck or occipital region with radiation toward one or both shoulders usually follows a recognizable symptom-sign syndrome which can be accurately diagnosed and effectively treated. There are other cases in which, while the clinical picture and physical manifestations are certainly clear cut, the examination and roentgenograms have heretofore failed to reveal any demonstrable pathologic condition.

In the past we have encountered such patients who were suffering from a type of neck pain which had been resistant to all attempts at satisfactory analysis, to say nothing of their complete impassiveness to the usual forms of therapy. Repeated and persistent efforts to identify the condition as bursitis, tendosynovitis, periarthritis, cervical rib phenomenon, anterior scalenus syndrome, supraspinatus disturbance, a localized myofascial lesion or, in some cases, even anatomic changes in the cervical vertebrae failed by all diagnostic as well as therapeutic tests. The ordinary roentgenograms of the cervical and shoulder regions in these cases repeatedly had been pronounced negative. The patient usually had seen every one, had tried everything and felt no better.

Finally, the physician came to segregate this group by the simple expedient of observing their response to intermittent sessions of head traction. This type of therapy generally brought a satisfactory response by relieving the patient of pain and again allowing him the normal ranges of motion. While the patient was grateful the physician was still not completely happy because of his inability definitely to classify the pathologic condition and because this particular therapeutic effort remained in the category of the empirical.

With the advent of the laminagraph, a new field of pathologic possibilities was opened up. This type of

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roentgenography, so-called body section roentgenography, can discard, in a manner of speaking, the overlying maxilla and present only the plane of the occipital condyles and the atlanto-occipital joints in sharp focus, exceeding therefore the limitations of the field visualized in the routine anteroposterior view through the mouth. Body section roentgenography as defined by Dr. Sherwood Moore,¹ who in collaboration with Mr. Keiffer of Norwich, Conn., perfected the instrument called the laminagraph, is a type of roentgen examination whereby a particular section, plane or layer of the body can be visualized with more or less complete exclusion of other layers. Continuing the delineation, he explains the physical principle as one in which during exposure a synchronized coordinated movement of an x-ray tube and film takes place about a fixed axis in such a way that shadows of objects in this axis maintain a constant relationship to the film and tube, while objects not in this axis have a shifting relationship so that their shadows are dispersed. Simply by way of further elucidation it may be stated that body section roentgen-

occipital condyles are symmetrical and sit evenly and squarely on the superior articulating facets of the atlas. The atlanto-occipital joints, heretofore obliterated by the superimposed dense shadow of the maxilla, are presented in clear detail and are seen to be smooth and equidistant. The lateral masses of the atlas are similar in both vertical and horizontal dimensions. The odontoid process of the epistropheus, or second cervical vertebra, is intact and free from irregularity. The articulating surfaces between the atlas and second cervical vertebra are smooth, equidistant and sit squarely one on the other.

PATHIOLOGY

The laminagram has disclosed various types of abnormality to the orthopedist so far as the occipital condyles and atlanto-occipital joints are concerned. The occipital condyles themselves may be asymmetrical or they may be displaced on the atlas so that there exists an atlanto-occipital subluxation. This may be the result of an acute traumatic incident. The atlanto-occipital joints may present various lesions: There may be a congenital

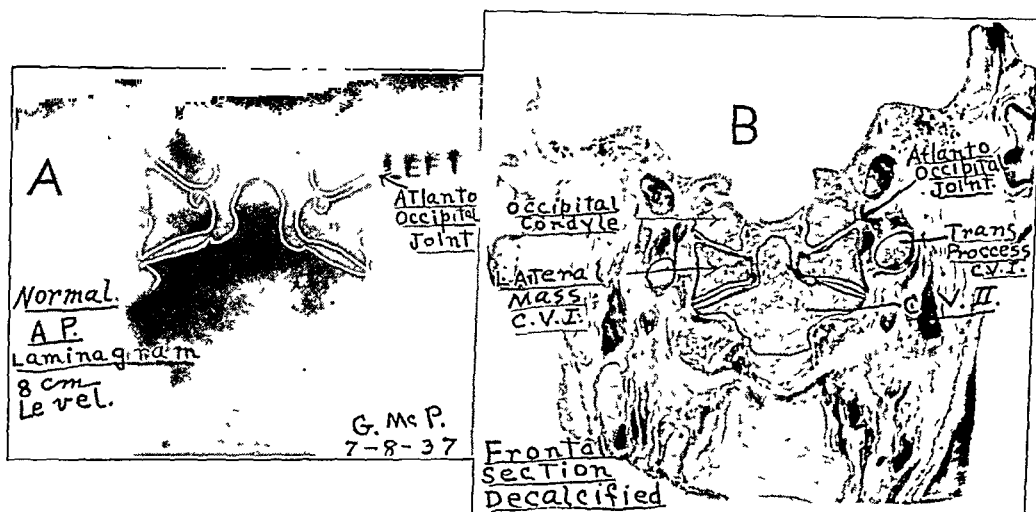


Fig. 1—A, negative laminagram of atlanto-occipital joints at 8 cm. depth showing relation of occipital condyles to first cervical vertebra and of first cervical to second cervical vertebra. B, anatomic specimen, decalcified, and sectioned in frontal plane through midpoint of odontoid process, demonstrating anatomic field outlined in A.

ography has found its greatest field of usefulness in the study of various pathologic conditions in the respiratory tract from the sinuses down to the various pulmonary conditions and, second, in parts of the axial skeleton. With special reference to the latter, it has been demonstrated that the first three cervical vertebrae can be studied and understood roentgenographically only by means of this body section method. Selecting patients with neck pain who did not respond to the usual types of therapy but did obtain relief from intermittent sessions of head traction, we therefore began submitting them to routine laminagraphic examination of the occipital condyles and contiguous joints.

NORMAL ANATOMY

In a laminagram disclosing a normal occipitocervical region (fig. 1), the base of the skull, the occipital condyles, the atlanto-occipital joints, the first and second cervical vertebrae with intervening joints and the odontoid process are well visualized and clearly defined. The

fusion of one articulation or both; there may be arthritic changes involving one or both sides—possibly more advanced on one side to the point of partial or complete obliteration of the joint; as previously mentioned, there may be a subluxation of the joint. The lateral masses may be asymmetrical, as in a fracture of the atlas. In such instances, one lateral mass as the result of compression may be asymmetrical in the vertical and horizontal dimensions as compared to its opposite fellow. The odontoid process may be irregular, may be fractured through its base, may be tilted or may be actually dislocated. The articulating facets of the first and second cervical vertebrae may show arthritic changes, may be asymmetrical or may be dislocated one on the other.

CLINICAL SURVEY

The clinical pictures of some of these lesions, apart from the frankly acute traumatic, have been neither simple nor clear cut. For instance:

CASE 1—R C, a woman aged about 63, was seen for the complaint of pain about her neck on the right side behind the ear and about the right shoulder. The pain was more severe in the shoulder region and there was localized tenderness about the

1. Moore, Sherwood. Body Section Radiography, *Radiology* 23: 605 614 (Nov.) 1939; Body Section Radiography with the Laminagraph in Pulmonary Disease, *Am. Rev. Tuberc.* 38: 538-556 (Nov.) 1938; Practical Applications of Body Section Roentgenography, *Am. J. Roentgenol.* 44: 24-30 (July) 1940.

bicipital groove as well as some tenderness referable to the insertion of the deltoid. There was limitation of all movements of this joint. She also complained of dizziness and uncertainty in walking at times. Before she was seen by us another physician secured a roentgenogram of the involved shoulder which revealed calcification in the right subdeltoid bursa. She was treated for subdeltoid bursitis by means of infra-red heat, exercises and diathermy and received a high voltage roentgen treatment. Following this, the pain became more acute. When the patient was examined and the roentgenogram seen, the therapy of multiple injection and aspiration of the bursa immediately came to mind. However, limitation of motion was demonstrated in the neck as well as some tenderness over the right atlanto-occipital joint and over the spinous processes of the lower cervical vertebrae. Before the aspiration was carried out, routine roentgenograms of the cervical vertebrae and the opposite (left) shoulder joint were taken, as well as laminagrams of the atlanto-occipital joints. They disclosed the

to the right. There was radiating pain to the left side of the neck, skull and face; there were also attacks of dizziness. All movements of the neck were definitely limited. She had occipital headaches one to three times a month. She had seen many specialists. She had not succeeded even temporarily in obtaining relief. Her head was held with a list to the left. Because the ordinary roentgenograms of the cervical spine had always been pronounced negative and she had been told repeatedly that there was nothing wrong with her neck in spite of the limitation of motion, she began to be a psychic problem as well. Laminagrams (fig. 2) disclosed a compression fracture of the lateral mass of the atlas on the right side. Also a suggestive posterior subluxation of the occipital condyles on the first cervical vertebra plus an angulation deformity of the shaft of the odontoid were demonstrated at about the midpoint by good detail lateral views. There was immediate relief from pain during sessions of head traction and her neck movements returned to their approximately normal range of motion. Tem-

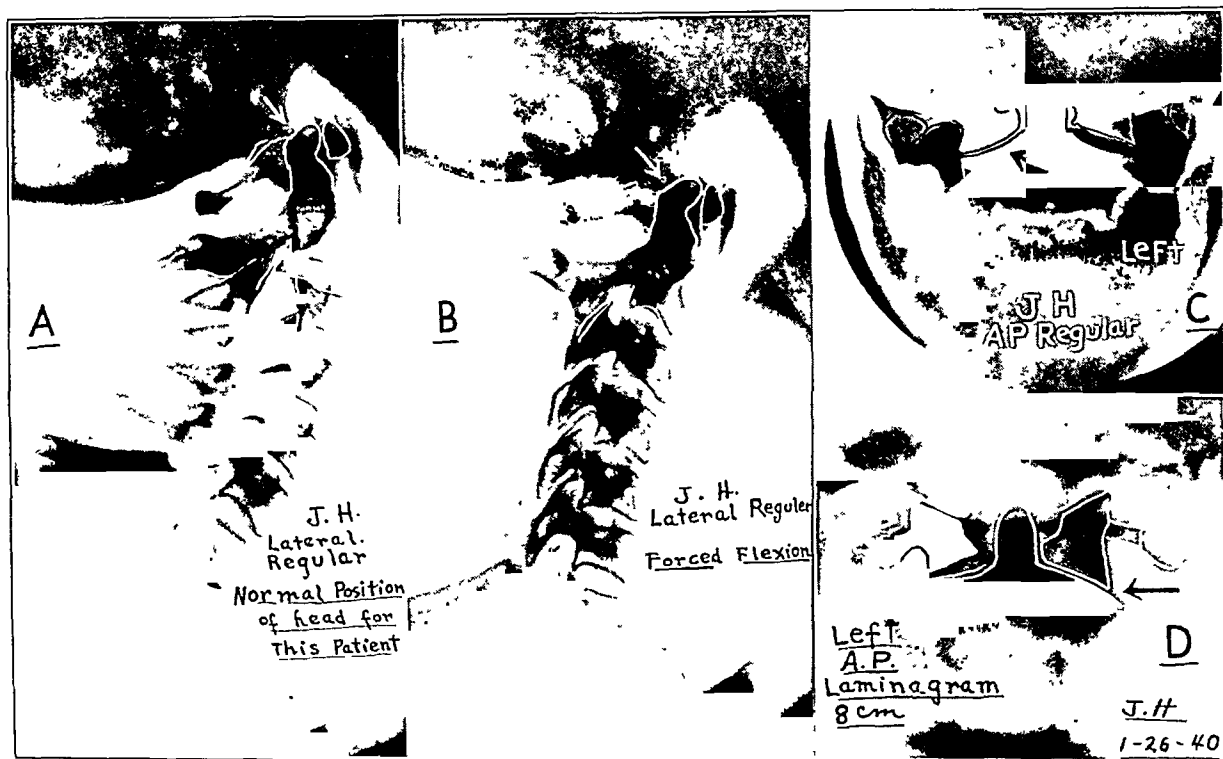


Fig 2—Lateral views of cervical vertebrae. A, showing apparent posterior displacement of occipital condyles on atlas. B, postural correction; also deformity of odontoid process. Questionable old fracture. C, routine anteroposterior view of first and second cervical vertebrae through mouth, showing diminution of joint space at arrow on right. D, anteroposterior laminagram of same area showing diminution in vertical dimension of lateral mass on left (old compression fracture) and narrowing of joint space on right between cervical vertebrae 1 and 2.

following: beginning calcification in the left subdeltoid bursa, hypertrophic osteoarthritis of the cervical spine and, in the instance of the laminagram, arthritis of the right atlanto-occipital joint. Since the shoulder abnormalities were now bilateral, although the left was asymptomatic, and in view of the cervical disturbance, the injection and aspiration were deferred until a trial at intermittent head traction was employed. On the first trial of head traction and while being thus suspended, she was happy to find that she was free from pain and could move the involved shoulder joint almost throughout the normal range in all directions. Following the use of intermittent head traction and the subsequent wearing of a Thomas collar, she became asymptomatic.

CASE 2—J. H., a woman aged 23, complained of pain in the neck of ten years' duration. The onset was associated with an accident on a sled. The symptoms were aggravated four years later when further trauma to the head and neck occurred during a motor car accident. The pain in the neck was continuous; it was increased when she rotated her head

porary use of a Thomas collar was followed by complete relief from pain.

CASE 3.—T. C., a woman aged 58, had been employed many years in a knitting mill handling a box-stapling machine. She maintained an average of one hundred staples a minute, so that her head was incessantly in motion turning to the right and back again. She also recalled having injured her head and neck in an automobile accident many years before. She complained of pain in her neck and at the base of the skull for the past two years, as well as a "grinding" sensation on turning her head. She felt that the pain was worse when the weather was bad. There were intervals of dizziness and attacks of headaches. She had limitation of motion to the right. Laminagrams of the occipital condyles (fig. 3) revealed a narrowing of the joint space between the occiput and the first cervical vertebra on the right as compared to the left. There was also a diminution in the vertical dimension of the lateral mass of the first cervical vertebra on the right as compared to the left. The joint space between the first and second cervical

vertebrae on the right was narrowed. The diagnosis was therefore traumatic arthritis of the cervical spine and, because of the diminution in the lateral mass on the right side, questionable old compression fracture of the first cervical vertebra. Intermittent sessions of head traction and the wearing of a Thomas collar caused a great deal of improvement.

CASE 4.—M. F., a woman aged 47, sustained an injury, revealed in a laminagram, during a motor car accident and refused to submit to first aid or early treatment. There was a fracture through the base of the odontoid with dislocation of the first cervical vertebra on the second. The patient was, of course, subject to persistent pain but has obtained relief by means of intermittent sessions of head traction and the use of a Thomas collar.

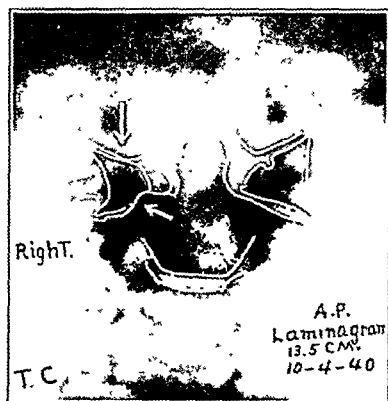


Fig. 3.—Anteroposterior laminagram of occipital condyles demonstrating narrowing of joint space between occiput and first cervical vertebra on right and between first cervical and second cervical on right (old fracture of lateral mass).

subject to attack only in weight bearing attitudes. There was a feeling of fullness on the right side of the neck and a grating sensation at the base of the skull on movement. This was further complicated by an increasing difficulty in swallowing. He was placed in bed in sustained head traction for several days. After the first few hours, the pain in the neck disappeared and he was able to swallow normally again. He was soon allowed up, receiving intermittent sessions of head traction, wearing in the intervals a supportive Thomas collar. On his discharge he was given a head traction unit to use in his home at intervals during the day. He obtained immediate relief from his neck symptoms, but whether this status can be maintained in the face of the alcoholism is questionable. However, he has been asymptomatic for a year.

Laminagrams (fig. 4) disclosed a congenital anomaly associated with the transverse process of the first cervical vertebra with a pseudarthrosis between it and the base of the skull.

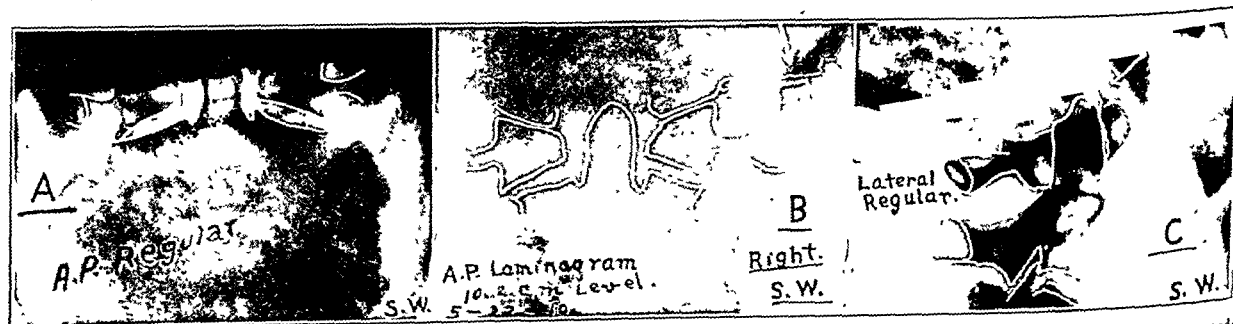


Fig. 4.—A, regular anteroposterior view of first and second cervical vertebrae through mouth, not demonstrating any remarkable pathologic condition. B, anteroposterior laminagram of same area demonstrating congenital anomaly of transverse process of first cervical vertebra with pseudarthrosis between its outer end and base of skull. C, lateral view of same area demonstrating spinelike process on superior rim of atlas.

The lateral view disclosed a hypertrophic spur on the anterior portion of the atlas.

CASE 6.—C. P., a man aged 62, contracted a painful neck and right shoulder, with pain radiating down the right arm to the fingers, while exposed to inclement weather during a hunting trip. The first physician on his return to town gave him diathermy treatments and injections of vitamin B₁. He had his teeth checked by a dentist. He went to another physician, who took roentgenograms of the shoulder, saw no anatomic

changes and told him that the pain would probably disappear. He then spent six weeks in the South. Without having obtained relief, he saw another dentist, who extracted three of his teeth. Besides pain persisting in a radiating manner down the right arm, he began feeling some pain down the left arm. There followed ten days at a health resort at which he took the baths. He returned to town with the same complaint, saw another physician and started diathermy treatments again. This proved futile. He next tried a physical therapist, who administered diathermy, electrical stimulation to the neck and arms, massage and Scotch douches. He also had resumed taking vitamin B pills. With no relief, he sought the advice of a neurosurgeon. Although the latter declined to accept the case, he did suggest an electric vibrator. He next saw two orthopedists, the one telling him that there was nothing to be done but to "grin and bear it," the other taking more roentgenograms of the shoulder in which a calcified mass in the subdeltoid bursa could not be demonstrated. Multiple injections and irrigations with procaine hydrochloride and saline solution were carried out. This proved valueless, so he went to an internist and was placed on a course of sulfanilamide. Following this he received a course of injections with bee venom. As a final effort he had his sinuses checked by an otolaryngologist, but this examination revealed nothing of moment.

In spite of the varied therapies which he received, he presented himself in July 1940 with pain in the neck radiating down to the shoulder on the right side, about the right shoulder blade and down the right arm. There was a sensitive area to pressure in the region of the head of the radius. His right hand, both on the dorsum and in the palm, seemed numb at times. He had intermittent pain radiating down the left upper extremity.

At this time laminagrams of the cervical vertebrae revealed a definite right atlanto-occipital arthritis. There were osteoarthritic changes between the fifth, sixth and seventh cervical vertebrae. After three weeks of intermittent sessions of head traction and the wearing of a Thomas collar, the peculiar pain in his forearm and hand disappeared and the neck pain subsided. At the present time he is completely recovered.

CASE 7.—E. M., a woman aged about 52, had been subject to rather severe occipital headaches, pain in the neck and pain radiating down the left shoulder and arm for a year. She had had vague intermittent pain in the neck for many years. She was told that "it was nerves and that she would be forced to take it." Movement of her head to the left was limited as well as limitation of abduction and internal and external rotation of the left shoulder. The ordinary roentgenogram in lateral view showed arthritic changes of the cervical vertebrae

The laminagram disclosed an atlanto-occipital arthritis on the right side. The film of the left shoulder showed no changes. Following head traction the headaches disappeared, pain in the neck and shoulders subsided and the movements of the neck approximated normal. With regular exercises, the movements of the shoulder joint became of full range.

CASE 8.—J. K., a university student, while tumbling sustained an injury to his neck. The neck became stiff, the head tilted to the right and there was decided limitation of motion.

to the left. Laminagrams (fig. 5) taken shortly after the accident disclosed a rotary subluxation of the occiput on the atlas to the right, as well as a mild rotary subluxation of the first cervical on the second to the left. Reduction by traction and mild manipulation cleared away the symptom complex.

CASE 9.—E. R., a woman aged 35, complained of a painful neck of some eleven years' duration. She had never been able to acquire any appreciable relief even for temporary intervals. More recently she was having pain about the roof of her mouth

arms across his chest, bringing the shoulders forward, most of the traction force can be diverted toward the posterior part of the neck and shoulder muscles. By moving his hips forward and hiking his pelvis he can transmit this force to the paravertebral low back muscles. Such a traction session is carried on for a period of from one to several minutes; traction is then released and the patient is allowed an interval of rest

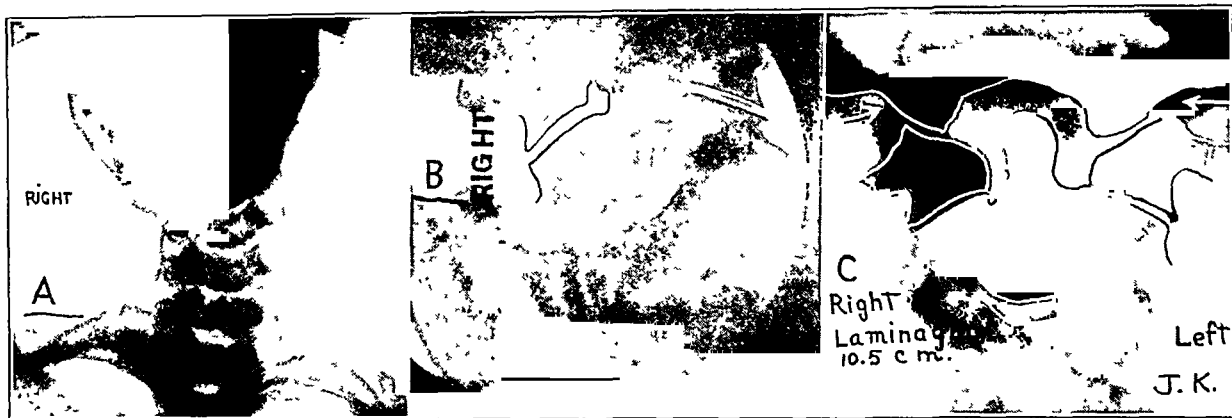


Fig. 5—A, anteroposterior view of cervical vertebrae showing tilt of head to right but no demonstrable abnormality. B, anteroposterior view through mouth of first and second cervical vertebrae, demonstrating rotary subluxation of cervical vertebra 1 on 2. C, anteroposterior laminagram disclosing rotary subluxation of occiput on atlas to the right as well as mild rotary subluxation of cervical vertebra 1 on cervical vertebra 2 to left.

on the right side, about the right temporomandibular region and radiating down the right side of the neck along the paravertebral muscles. She complained of a grating sensation on rotation of the head and a crawling sensation over the right side of the face. Because of the temporomandibular pain and occasional ringing in her ears, as well as a tendency to grit her teeth for relief, she was seen by an otolaryngologist and dentist, whose examinations were negative. Laminagrams (fig. 6) of the occipital condyles revealed an arthritis of the right atlanto-occipital articulation and an irregularity of the joint. She obtains relief from her attacks by the use of intermittent head traction and a Thomas collar. Her attacks, while they do occur, have done so with less intensity and less frequency.

TREATMENT

The apparatus used for head suspension both as a diagnostic and as a therapeutic aid is composed simply of the ordinary Sayre head traction apparatus. We have made up our own head halter of canvas, which is more comfortable than the usual leather types. Intermittent head traction is obtained by adjusting the traction apparatus with head halter to the patient and having him rise on his toes as high as possible. The traction unit is then made secure at this level and the patient gradually lets his heels down until they approximate the floor. Usually there is sufficient traction by this method to allow for whatever painless manipulation of the neck is desired. The patient is taught to relax completely. Usually the range of active movements in traction is then checked by allowing the patient to move his head to the right, to the left, in hyperextension and in flexion. These movements are then passively carried out to their complete range of motion. By flexing his head and folding his

This procedure is usually repeated three or four times. The amount and duration of the traction force is carefully gaged to the comfort and tolerance of the patient.

Other phases of the treatment are variable and adapted to the individual case. A rather acutely painful neck as well as a chronically painful one may require a preliminary treatment of infra-red heat. The sessions of intermittent traction are spaced according to the need; they may be employed daily, every other day or several times a week. This may or may not need to be

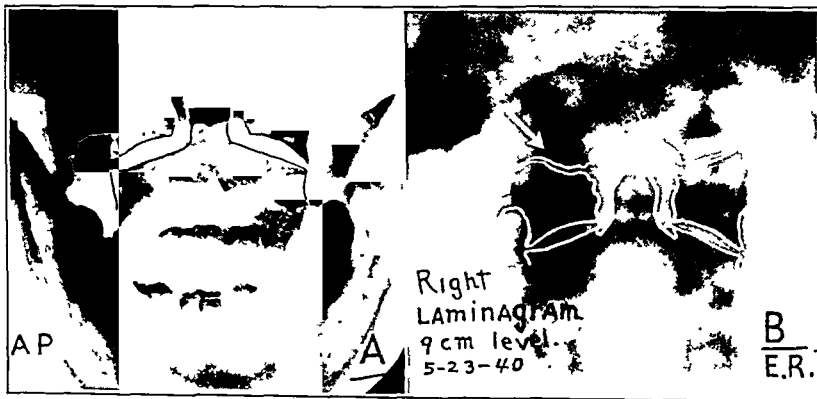


Fig. 6—A, anteroposterior view through mouth, not demonstrating any notable pathologic condition. B, anteroposterior laminagram of occipital condyles showing right atlanto-occipital joint irregularity and arthritis.

supplemented by the wearing of a Thomas collar. In very severe or very resistant cases, prolonged head traction in bed may be necessary for a time. While thiamine hydrochloride and salicylates may be employed in these cases, it is preferable not to employ any agent which will in itself obliterate pain during the early phase of treatment, for these agents may mask the picture and give an illusion that the traction method is both a diag-

nostic and a therapeutic success. These patients, especially chronic sufferers, are often nervous and mentally disturbed because of the acute or prolonged siege. Very small doses of bromides temporarily administered are effective in helping them to regain their poise and self assurance while undergoing treatment.

COMMENT

There are many patients who present themselves with the complaint of neck pain or pain radiating about the shoulder. It has become apparent that a considerable number of these have their source of irritation in the cervical vertebrae rather than in the shoulder region, and in spite of negative routine roentgenograms of the cervical vertebrae laminagrams have demonstrated the pathologic condition to be about the occipital condyles and atlanto-occipital joints.

One immediately begins to concern oneself about the distribution of pain in these instances. The possibilities are: first, pain emanating from muscle imbalance or spasticity secondary to joint derangement (somatic pain); second, pain emanating from irritation of the root of the nerves as they emerge from their bony foramina (radiculitis).

Somatic pain may be a wily symptom. When it arises in skin or in exposed mucous membrane, the site of pain may be accurately indicated. But when pain arises from the deeper somatic structures, such as muscles and joint attachments, the localization may become a problem. A classic example of this is the referral of pain to the knee when the hip joint is involved. Muscle pain is disagreeable, diffuse, continuous and difficult to locate. If the patient, for example, feels the pain at the time he is describing it, he may localize it fairly well. At other times he may impress one as being very vague about this most disturbing annoyance. In cases of "fibrositis" and "myalgia," tender spots may be giving rise to widespread referred pain and even to areas of referred tenderness. A strained joint gives rise to a "dull ache." Strain on the muscle or aponeurosis attached to the occiput may produce occipital headache. So, too, pain arising from root pressure (radiculitis) may present a pattern of long range radiation. Phrenic irritation at the level of the first and second cervical vertebrae may give rise to pain over the lower ribs on one side aggravated by coughing or sneezing, as a result of spasm of the diaphragm. In the same area occipital neuralgia and occipital headache are frequently referred along the posterior divisions of the corresponding cervical nerves. Pain may be referred along any of the branches of the superficial cervical plexus from the third and fourth nerve trunks and may be attended with severe cervical and posterior auricular neuralgia.

While somatic pain may arise independently of root irritation, root irritation would seem to be always accompanied by some type of somatic pain. Hence there is possible the blending of the two pain patterns in many clinical pictures with the resulting confusion as to proper and accurate allocation.

Since some of the occipitocervical lesions presented have bony abnormalities which are not, figuratively speaking, erasable, it stands to reason that the symptom complex in some of these cases may not be permanently allayed. Patients do obtain immediate relief in many instances and prolonged relief in as many more by the head traction therapy as outlined. But such a lesion as a unilateral atlanto-occipital arthritis is always susceptible to an acute exacerbation if the patient disregards the proper measures for protection.

CONCLUSION

Occipitocervical lesions, heretofore obscure because of the limitations of the ordinary roentgenograms, are now demonstrable by body section roentgenography.

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ABSTRACT OF DISCUSSION

DR. W. EDWARD CHAMBERLAIN, Philadelphia: I have been interested in the upper end of the cervical spine. My associates and I encountered a group of cases in which anomalies of this region turned out to be causing pronounced neurologic changes. There are all gradations of anomalies in this upper region. In 1 case there was a failure of segmentation at the fourth and third cervical vertebrae. All are familiar with congenital fusion or developmental anomalies in which segmentation was faulty in all parts of the spine. In another case a failure of segmentation occurred between the second and third cervical vertebrae. In 1 case failure of segmentation involved a large segment of the cervical spine. In a case in which an anomaly was present, this failure of segmentation occurred between the second occipital and the first cervical, with fusion of the atlas and the base of the skull. The boy had syringomyelia, which was cured by surgical operation which included the removal of the dorsal part of the foramen magnum and the dorsal part of the atlas. A girl had all of the symptom complexities of multiple sclerosis. She was cured by removal of the dorsal part of the foramen magnum and the dorsal part of the fused atlas. A boy died from syringomyelia before we discovered that we could have done something about it because the condition was caused by sclerosis of the canal and foramen magnum. In roentgenographing this part of the spine watch for elevation of the first and second cervical vertebrae, which goes with this condition. I wish to emphasize the usefulness of the open mouth technic even though we have the laminagraph, because it helps us to see what the relationship of these parts is to the base of the skull. In the open mouth technic, if the edges of the teeth and the base of the skull are superimposed, the deltoid process will show up in the open mouth and so will most parts of the first cervical or the atlas. In a case of platybasia, a developmental anomaly of the first cervical and second occipital, with the edges of the teeth approximately at the base of the skull the deltoid process was seen way up inside the skull.

DR. SHERWOOD MOORE, St. Louis: The types of patients with the histories presented are great sufferers, and diagnosis and treatment are most difficult. A neglected neck injury may and frequently does produce a neurotic state which is quite characteristic, enough so that a description of an individual case has been written up in humorous vein in one of our monthly magazines. Dr. Chamberlain's statement regarding the film of the first cervical vertebra made through the open mouth is of utmost importance. However, upper cervical traumas and anomalies are the bane of the radiologist when he is limited to conventional methods of x-ray examination. With conventional methods, stereoscopic films, films from different angles, there is a need for something additional. This is fulfilled by the laminagraph. It should be mentioned that other appliances of this type may be helpful, but not one of them is as efficient as the laminagraph. It should be pointed out however that, with all new advances, standard radiologic and physical methods cannot be discarded. The laminagraph is most helpful in the cervical region, as it is in all similar regions where there is a maximum superimposition of structures obtained on the x-ray negative. These shadows can be largely eliminated with the laminagraph.

DR. MARIUS N. SMITH-PETERSEN, Boston: Did the physical findings and distribution of subjective pain correspond in your cases to the x-ray findings or were your diagnoses always based on the x-ray appearance alone?

DR. FREDERICK A. JOSTES, St. Louis: To answer Dr. Smith-Petersen I would say that the physical findings were definitely referable to the lesion, that they were at times confused, as was mentioned in the paper, with cervical radiculitis from arthritis.

of the fourth, fifth, sixth and seventh. With reference to the open mouth roentgenogram, sporadically we have had excellent results with the simple roentgenogram also, but one probably roentgenographs 50 or 60 patients before one sees a good one. Incidentally, many of these patients, as Dr. Sherwood Moore has mentioned, become neurologic and psychiatric problems. They go from pillar to post without relief, and pain is intense. If I did not mention it—and Dr. Lewin called my attention to it—great occipital radiation is a very important symptom. These patients also have pain in the ear and, as this one woman described it, she had a peculiar crawling sensation over that side of her face. The mouth does not escape involvement, particularly the hard palate.

CARCINOMA OF THE LUNG OF LONG DURATION

ALFRED GOLDMAN, M.D.
SAN FRANCISCO

Hardly a series of cases of carcinoma of the lung has been reported without mention of some cases in which the duration was two years or more. In Brunn's¹ series (1926) there were 20, or 7.5 per cent, of cases in which the disease had such a duration. In the reports published before 1932² it is unlikely that adenoma was differentiated from carcinoma. It seemed advisable

to review our cancer material to determine whether, exclusive of possible adenoma, cancer of long duration existed. Eleven cases of cancer of a duration of more than two years, proved histologically, were encountered and studied. In the course of the study certain data were discovered which may be a clue to earlier recognition of some types of carcinoma.



Fig. 1 (case 11).—Roentgen appearance on Oct. 15, 1937. Overlying the third rib anteriorly is an irregular density.

The age distribution of the patients was not remarkable, the ages ranging from 40 to 70. But wider variations are found in larger series. All the patients were men, but only 91 per cent of my last 111 patients with pulmonary cancer were male. The high incidence of cancer in men over 40 offers aid in differentiating the slowly growing tumors from adenoma, since nearly two thirds of patients with adenoma have symptoms before 40 and the same proportion are female (12 of my 19 patients). Furthermore, in our experience when the diagnosis of polypoid bronchial tumor could not be decided during life and the patient was a man over 40 the diagnosis at necropsy was a malignant tumor.

The pathologic changes did not vary much from those reported by others for tumors of the same histologic types. It was noted by Brunn¹ and Gebauer³ that epidermoid carcinoma tended to remain more localized than other types, although exceptions existed. It is noteworthy that 10 of my 11 patients had epidermoid carcinoma, while only 1 had alveogenic carcinoma. Although in all our patients with adenocarcinoma the disease had a relatively short duration, Gebauer has reported on 1 whose tumor had a clinical course of four years. He noted, as my associates and I have, the difficulty in distinguishing adenoma from adenocarcinoma.⁴

The location of the 11 tumors is of interest and in general would support the observation of Neuhof⁵ that peripheral circumscribed carcinoma is of longer duration than carcinoma in a large bronchus. Since at postmortem examination it is often difficult to determine the site of origin of carcinoma, this is best determined from roentgen and bronchoscopic studies during life. In only 2 of our patients could the tumor be classed as central; in the remaining 9 it was peripheral.



Fig. 2 (case 11).—Appearance Jan. 31, 1940. The tumor mass occupies the entire atelectatic upper lobe of the right lung.

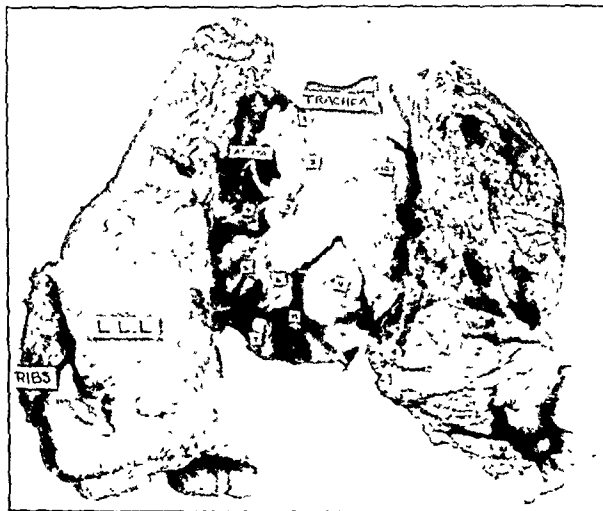


Fig. 3 (case 4).—Postmortem specimen. Note the ten enlarged mediastinal lymph nodes. There was no carcinoma in any of them. Note the invaded diaphragm and ribs.

During the growth of the tumor, which may fill an entire lobe, the earliest roentgen studies may reveal a small peripheral mass which as it grows into a large bronchus produces a large opacity in the films and bronchoscopically becomes visible as a tumor, so that

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one would say that it was of central origin and location if one did not have knowledge of the earlier site (case 11, figs. 1 and 2). The tumor in the stem bronchus was localized, produced an annular constriction (case 6, fig. 4) but was not polypoid. The lobar site of the primary tumor in the remaining cases was the upper lobe of the left lung in 3, the upper lobe of the right lung in 3, the lower lobe of the left lung in 3 and the lower lobe of the right lung in 1.

Histologically the postmortem specimens were characterized by necrosis and invasion. This necrosis was marked in lymph nodes and visceral metastases as well as in the primary growth. The epidermoid differentiation was varied in the different tumors and even in different sections from the same tumor, so that some

6, 4 and 3 might have been resectable at the time of postmortem examination. Overholt⁶ was able to show an operability of 22 per cent in all the cases in which he explored, and this percentage did not include the



Fig. 4 (case 6).—Postmortem specimen thirteen years after onset of symptoms. There were no extrathoracic metastases and no metastases to mediastinal lymph nodes. The carcinoma is epidermoid. Cancer surrounds the stem of the left bronchus.

areas appeared squamous cell in type while others tended to approach the oat cell type.

The spread of these tumors was definitely less than that usual for cancer of shorter duration. Extrathoracic metastases were demonstrated in only 3 of the 11 cases. One of the patients (J. C., in case 1) is still alive two years after a biopsy showing cancer in supraclavicular lymph nodes. Intrathoracic spread alone occurred in 7 additional cases. The pleura was involved in 2, the mediastinum (including the pericardium) in 4, the chest wall in 2 and the contralateral lung in 1. This spread probably appeared late in the course of the disease, since necropsy in cases 6 and 11 disclosed no spread beyond the lobe in which the tumor had arisen. Although the operability of such tumors is apt to be less in the stage seen at necropsy than in that observed at exploratory laparotomy, the tumor in cases 11, 10,



Fig. 5 (case 4).—Section through a broken down carcinoma: $\times 4$



Fig. 6 (case 4).—Epidermoid type; $\times 700$

cases in which a palliative resection might have been done; he found the tumor in 24 of 75 cases (32 per cent) operable when a histologic diagnosis was made.

6. Overholt, R. H., and Rumel, W. R.: Clinical Studies of Cancer of the Lung, J. A. M. A. (March 2) 1940.

On admission there were an abscess and empyema in 2 cases, an abscess alone in 2 and a broken down tumor simulating an abscess in 1. Pain, cough and wheezing were frequently the presenting symptoms in the remaining 6 cases, but when empyema or abscess occurred it so overshadowed the symptoms referable to a tumor that an underlying tumor was not even considered for several years. Bronchoscopic examination in 5 of the 6 cases of abscess did not result in a positive diagnosis of cancer. Only in case 6 was there visible evidence of encroachment on a bronchus, and even in this case a positive diagnosis was not made from bronchoscopic biopsy. The tumors were peripher-

overlies an early cancer. But when a pulmonary abscess is drained surgically, biopsy of its walls may show occult carcinoma. Lobectomy for some patients with abscess appears to be a logical procedure (case 4, figs. 3, 5 and 6).

Roentgenograms were not taken before the production of empyema and abscess except in case 4, in which a tumor the size of a golf ball was present. In the remaining 4 cases of abscess roentgen evidence of a tumor mass was not present until much later if at all; usually it was overshadowed by the empyema or the abscess. When the mass was seen it appeared round or oval. But in the roentgenograms of earliest peripheral pul-

Data on Eleven Men with Carcinoma

Case No.	Age	Duration of Carcinoma Until Diagnosis, Mo.	Duration from Diagnosis Until Death, Mo.	Total Duration, Mo.	Presenting Symptom of Disease	Location	Histologic Type	Treatment	Results of Biopsy and Postmortem Observations	Comment
1	33	60	24	84	Abscess, empyema, cough	Upper lobe of left lung, peripheral and circumscribed	Epidermoid	Drainage, irradiation	Biopsy of supraclavicular lymph nodes positive for carcinoma	Patient alive 2 years after positive lymph node biopsy
2	48	42	12	53	Abscess, empyema, cough	Upper lobe of left lung, peripheral	Epidermoid	Drainage	Invasion through thoracic wall; no extrathoracic metastases	Death from sudden massive hemorrhage
3	46	38	0	98	Abscess	Upper lobe of right lung, peripheral	Epidermoid	Drainage	No extrathoracic metastases	Diagnosis not made until necropsy
4	45	24	4	28	Cough, pain, abscess	Lower lobe of left lung, peripheral	Epidermoid	Drainage, lobectomy and resection of chest wall and diaphragm	No extrathoracic metastases	Died after lobectomy with resection of chest wall
5	57	60	1	61	Abscess, cough, "pneumonia"	Lower lobe of left lung, peripheral	Epidermoid	Thoracotomy	Extension to pleura; no extrathoracic metastases	Died after thoracotomy of contralateral spontaneous pneumothorax
6	54	103	11	168	Pain, cough	Main stem of left bronchus, central	Epidermoid	Refused resection	Multiple peripheral abscesses; annular localized tumor	Bronchoscopic evidence of carcinoma 1 year before death
7	47	72	3	75	Pain, cough, dyspnea	Lower lobe of left lung, peripheral	Epidermoid	None	Widespread invasion of pericardium; death from chronic cardiac tamponade	Small pulmonary tumor
8	56	240	4	244	Pain, cough, wheezing	Upper lobe of right lung, central	Epidermoid	Irradiation, exploratory thoracotomy	Patient alive; mediastinal extension	Inoperable carcinoma
9	70	144	7	151	Wheezing, pain, cough	Upper lobe of left lung, peripheral	Epidermoid	None	Metastases to numerous mediastinal lymph nodes, also to spleen and liver	Death from massive pulmonary hemorrhages; cystic bronchiectases on left
10	68	120	1	120	Cough, dyspnea	Lower lobe of right lung, peripheral	Alveogenic	None	Spread to contralateral lung but no extrathoracic metastases	Death from bronchopneumonia
11	53	30	0	30	Cough, hemoptysis, dyspnea	Upper lobe of right lung, peripheral	Epidermoid	None	No extrathoracic metastases	Death from hemorrhage

ally located, beyond the range of the bronchoscope. The 5 patients without early abscess formation presented wheezing, pain and dyspnea as their earliest symptoms. The duration before diagnosis of symptoms referable to the thorax averaged ninety months. The duration from diagnosis until death or to the time of writing averaged only seven months. This indicates a long delay in diagnosis.

Why empyema and abscess occurred in 5 cases so long before the diagnosis was made is obscure. It is probable that the tumor in these cases arose near or in a small branch of the bronchus and tended to produce an abscess in a small area of lung in which bronchial drainage was obstructed and in which tension emphysema could develop. Rupture of the abscess, with resulting empyema, could have occurred easily in 2 cases. No clinical criteria were gained during this study that would make possible the diagnosis when empyema

monary carcinoma the shadow was irregular, small, and appeared moth eaten. Like bronchoscopic examination, roentgen examination does not prove the diagnosis in the majority of cases of peripheral tumor; thoracoscopy and exploratory thoracotomy are necessary. The use of microfilm and photofluorography offers a new method for detecting early peripheral pulmonary carcinoma in mass surveys before empyema and abscess have been produced.

Bronchoscopic biopsy showed positive evidence of cancer in cases 5, 7 and 8 only. This is a slightly lower percentage (27 per cent) than that of carcinoma in general, since of my 111 cases bronchoscopic biopsy gave positive results in approximately one third and in another third there was some evidence of tumor without corroborative biopsy. In cases 6 and 9 postmortem examination indicated that a corroborative biopsy specimen might have been obtainable.

The diagnosis in case 4 was based on biopsy of the abscess wall done at the time of surgical drainage. In case 1, in spite of surgical drainage biopsy of the peripheral abscess showed no tumor, and the diagnosis was not made until four years later, when a supraclavicular lymph node was found to be tumorous. In case 2 the tumorous tissue was obtained by transthoracic aspiration, which was later followed by extension through the chest wall at the site of puncture. In cases 3, 6, 10 and 11 the diagnosis was made at necropsy. Since the diagnosis was made late in the course of the disease in this group, in spite of bronchoscopic and roentgen examinations, it appears that newer knowledge and a newer approach are necessary before satisfactory surgical results can be obtained in a large percentage of cases.

Data on the 11 patients are presented in the accompanying table.

SUMMARY

1. Carcinoma of the lung may be of long duration; the duration from the time of onset of symptoms until diagnosis averaged ninety months in this series of 11 selected cases, 10 of which were epidermoid.
2. Of these cases evidence of spread of the tumor beyond the feasibility of surgical removal was present at necropsy in only 5, but a high operative mortality might have been expected at this late stage.
3. The delay in diagnosis was due to the inadequacy of bronchoscopy and roentgen examination to demonstrate early small peripheral tumors, particularly when empyema and abscess complicated them.
4. Exploratory thoracotomy to confirm the suspicion of cancer is a logical procedure and should be used as readily as is exploration for suspected abdominal cancer.
5. Lobectomy for abscesses of the lung possibly associated with carcinoma is a logical procedure, which should bring about removal of some early cancers when substituted for surgical drainage.
6. Education of both patient and physician is necessary to produce in them an anaphylactic reaction to the possibility of cancer in men over 40 with symptoms of pulmonary disorder.

REPORT OF CASES

CASE 1.—J. C., a white man aged 53, entered San Francisco Hospital in 1934 with symptoms of pulmonary abscess in the upper lobe of the left lung consisting of pleuritic pain, cough and the production of malodorous sputum. Two stage drainage for the abscess was performed on March 16 and 26, with removal of the second, third and fourth ribs. A large collection of encapsulated pus communicating with the bronchi was drained. The bacteria found in the pus were mixed, consistent with oral flora. Biopsy of the peripheral parietal and visceral pleura showed no neoplasm. Probable interlobar empyema from rupture of a peripheral pulmonary abscess was diagnosed. The patient was discharged May 15 with a bronchial fistula which was not completely healed until August. He remained well except for slight cough and minor infections of the respiratory tract until June 1938, when he noted an increase in the cough and some streaking of the sputum. In December he began to have pain over the left upper part of the chest, with radiation down the arm, along the distribution of the fifth cervical nerve. A lump appeared just above the middle of the left clavicle in March 1939. There was also a hard mass palpable beneath the left pectoral muscle. On May 29 a biopsy of the supraclavicular mass was performed. The mass was round and hard and was attached to all the structures in the vicinity of the brachial plexus and the scalenus anticus muscle. On removal of a small section (1 cm.) a large amount of sterile, pussy, necrotic material exuded from the mass. Histologic sections revealed metastatic carcinoma in a lymph node. Neutron

therapy, in a total dose of 525 neutrons, was given by Drs. Lawrence and Stone on June 6 and 20. Supervoltage roentgen therapy, with a force of 1,000,000 kilovolts, was administered August 3 to September 7. The skin-target distance was 80 cm.; the filter was 2 mm. of lead; the strength of the current was 1 milliampere; the dose was 200 r measured in air to fields 15 by 15 cm.; the locality was the left upper part of the chest. Treatment was alternated anteriorly and posteriorly daily. The total dose to the front and the back was 3,000 r each. The size of the induration in the left supraclavicular area diminished rapidly, and the patient's general condition improved by October. Large veins appeared in the left anterior portion of the chest. Roentgenograms of the lungs indicated some diminution in size of the pulmonary opacity, but this was not extensive. On May 15, 1941, seven years after the pulmonary abscess and two years after the tumor was demonstrated in the supraclavicular lymph nodes, the patient was well and working. However, recent roentgenograms show a mass in the upper lobe of the right lung.

CASE 2.—W. McB., a white man aged 48, had empyema following "pneumonia" in 1935. Drainage of the empyema was performed, and the course was prolonged. A bronchial fistula closed after several months. About three and one-half years after the onset the patient reentered the San Francisco Hospital, where roentgenograms of the chest revealed in the upper lobe of the left lung a mass 3 to 4 cm. in diameter surrounded by shadows denser than normal. Bronchoscopic examination gave negative results. Transpleural aspiration resulted in a positive diagnosis of epidermoid carcinoma. The pulmonary mass slowly enlarged, and a supracostal mass appeared under the soft tissues of the chest wall in the region of the previous transpleural aspiration. The patient died of a sudden massive hemorrhage about one year after the diagnostic biopsy was made. The total duration of his illness was fifty-three months. Postmortem examination showed that almost the whole upper lobe of the left lung was replaced by a circumscribed epidermoid carcinoma. A large separate mass lay above the thoracic bony cage surrounding the upper lobe of the left lung. There was no massive invasion of the pleura.

CASE 3.—S. K., a white man aged 46, entered the San Francisco Hospital in 1934 with an acute, violent, putrid abscess of the upper lobe of the right lung. He was treated by conservative measures for five months. During this time bronchoscopic examination showed a severe inflammatory reaction but no evidence of neoplasm. The symptoms subsided, and he was discharged as cured, although roentgenograms still showed irregular opacities occupying the site of the abscess. Two and a half years after discharge he returned to the hospital with the history of having recently spat up bloody foul sputum. He was moribund on admission and died of acute necrotizing pneumonia. The total duration of symptoms was ninety-eight months. Postmortem examination showed diffuse pneumonia but showed also a localized epidermoid carcinoma in the upper lobe of the right lung. There were no metastases.

CASE 4.—J. V. H., a white man aged 45, had a history of cough, the production of sputum, loss of weight, dyspnea and intermittent hemoptysis for fourteen months. Intermittent fever was present, the temperature ranging from 100 to 101.5 F. The patient was hospitalized after extensive hemoptysis. After roentgen and bronchoscopic studies a diagnosis of probable pulmonary abscess was made. At bronchoscopy the tertiary branch of the bronchus in the lower lobe of the left lung was patent. Biopsy of a secondary division of this branch did not suggest bronchiogenic carcinoma. There was definite clinical improvement with conservative therapy, and the patient was discharged. Cough, the production of sputum and fever returned within one month, and after three months he was again hospitalized. Surgical drainage of the pulmonary abscess was then carried out. He continued to have hemorrhages from the wound and lost ground. After transfusions he improved somewhat, and about ten weeks after the original drainage an attempt was made to remove the lung. The lung was extensively adherent to the ribs and to the diaphragm. The patient died of shock, hemorrhage and bronchial obstruction before lobectomy and excision of the invaded thoracic wall could be completed.

(Jan. 15, 1941). Biopsy of the abscess wall in November 1940 had shown epidermoid carcinoma, and the postmortem examination showed that the "abscess cavity" was wholly composed of carcinoma. The total duration of symptoms was twenty-eight months.

CASE 5.—A. D. (a private patient of Drs. H. Brunn and Samuel Robinson), a white man aged 57, began to have pulmonary symptoms after an operation for jejunoileic fistula done with ether anesthesia. Approximately three weeks later a pulmonary abscess developed in the upper lobe of the left lung and was treated with medical measures, with subsequent subsiding of all symptoms and clearing of the shadow in the roentgenograms of the right lung. During the next five years he was well and free from cough except for occasional colds and "cigaret cough." His weight during these years increased from 135 to 190 pounds (from 61 to 86 Kg.). On Aug. 15, 1934 he had severe pleuritic pain on the left side and an increase of his cough, which was productive of purulent sputum. In the next two months the cough and production of sputum became progressively worse and the sputum was blood tinged. As the exacerbation had taken place in the Orient he immediately sailed for home. The condition was diagnosed as oriental pneumonia. Physical examination showed that his general condition was good. There were signs of dullness below the left scapula, and in the region below the scapular angle there were numerous coarse rales. There was no lymph adenopathy. The vital capacity was 1,800 cc. The blood showed mild anemia. The hemoglobin content was 85 per cent, the red cell count 5,140,000 and the white cell count 20,260, with 85 per cent polymorphonuclear leukocytes. Bronchoscopy on Jan. 20, 1935 showed an epidermoid carcinoma at the level of the division between the lower and upper lobes of the left lung. Exploratory thoracotomy was done on January 21. An inoperable carcinoma was found. No attempt at removal of the tumor was made. Postoperative subcutaneous emphysema occurred and terminated in bilateral pneumothorax. The patient died on the second day after operation. Roentgenograms made on January 17 showed atelectasis of the lower lobe of the left lung and slight displacement of the mediastinum to the left. Necropsy showed a carcinomatous mass in the lower part of the main stem of the bronchus, with atelectasis and abscess in the central portion of the mass in the lower lobe of the left lung. The pleura was invaded. The total duration of illness was sixty-one months.

CASE 6.—S. C., a white man aged 54, entered the San Francisco Hospital in 1936. The onset of symptoms was difficult to determine. In 1919 severe pleurisy on the left side was followed by cough. Since that time the patient had had a slight cough productive of mucoid sputum in small amounts. There were frequent recurrences of pleuritic pain until 1930. In 1933 the cough became worse, and in February 1936 it became more productive of grayish sputum. In May he began to have wheezing and dyspnea. He entered the San Francisco Hospital on Aug. 22, 1936 and was there for six months, during which he had continuous fever and a cough productive of mucoid purulent sputum, in varying amounts, of which examination was always negative for elastic tissue. He was discharged on Feb. 15, 1937 somewhat improved. In the next ten months he became worse. His cough increased, the sputum became more purulent and he lost 30 pounds (13.6 Kg.). He reentered the hospital on December 14. This time physical examination showed him to be emaciated and slightly dyspneic, but he did not otherwise appear acutely ill. Numerous rales were heard throughout the left side of the chest. Examination of the sputum was negative for tubercle bacilli, and roentgenograms showed atelectasis of the left lung. On Feb. 2, 1938 bronchoscopic examination showed incomplete stenosis of the bronchus in the upper lobe of the left lung, with an opening only $\frac{1}{16}$ inch (0.16 cm.) in diameter. Around this opening exuded thick purulent secretion, smears of which were negative for tubercle bacilli. Biopsy was not done at this time. The patient refused further therapy, and he died on Jan. 4, 1939. The total duration of symptoms was one hundred and sixty-eight months. Postmortem examination showed a localized annular carcinoma of the left lung, with stenosis of the main

stem of the left bronchus, atelectasis of the left lung, bronchiectasis and numerous secondary peripheral abscesses. Histologic examination showed the tumor to be epidermoid carcinoma.

CASE 7.—R. R., a white man aged 47, gave a history dating back about six years. There had been slight pain in the chest for years, but it had become much worse in the last one or two months. It was aggravated by coughing and deep inspiration, appeared about three hours after the patient ate and was worse after he ate meat. It was worse when he was on his back but was relieved by his leaning forward and by vomiting. There was substernal pain radiating to the back; this was burning and dull and lasted an hour or so. He had had a slight cough all his life, productive of a small amount of yellow mucoid sputum and worse in the morning (producing $\frac{1}{2}$ cup). There was no hemoptysis, but he showed dyspnea on exertion such as going up one flight of stairs and on lying on his left side. The patient was hospitalized for cardiac failure of undetermined cause June 29 to July 14, 1939 and has been compensated since. There were a slight lag, a diminished percussion note and breath sounds over the left side of the chest, with numerous moist rales. Roentgenograms of the chest showed a tumor of the lower lobe of the left lung. Bronchoscopy on Feb. 10, 1941 showed that the left bronchus was contracted and obstructed. Smears of material taken at the time of bronchoscopy were negative for acid-fast bacilli. Biopsy showed squamous cell carcinoma. The patient reentered the hospital in March 1941, and his course was steadily downhill until he died on April 10. The total duration of symptoms was seventy-five months. Postmortem examination showed an epidermoid carcinoma arising from the paramediastinal branch of the lower lobe of the right lung, with invasion of the pericardium and epicardium and the production of constriction of the heart. There were metastases to the pleura, lymph nodes, liver and small bowel.

CASE 8.—C. B., a white man aged 56, in 1921 had dry pleurisy on the right side followed by a dry, nonproductive cough. This was better in 1933. In June 1940 he noticed wheezing at night, particularly when lying on the right side. The cough became more constant and was paroxysmal after smoking. Night sweats were present intermittently for many years. Fluoroscopic examination in July 1940 showed a large density in the region of the right hilus. The sputum was mucoid, but examination was negative for acid-fast bacilli. Bronchoscopy on Feb. 21, 1941 showed an ulcerative stenotic lesion about the orifice of the upper lobe of the right lung. The pathologic diagnosis was epidermoid carcinoma. A severe injury to the right side of the chest with fracture of ribs had occurred in 1911. The Wassermann reaction was negative, although a diagnosis of syphilis had been made in 1911. The patient had smoked steadily since the age of 16, using one package of cigarettes daily. He had been exposed to chlorine fumes from a sewage plant during the past eight months. Roentgenograms made on July 27, 1940 showed a dense hilar mass on the right and upward displacement of the anterior part of the septum between the upper and middle lobes. There was probable atelectasis of the anterolateral segment of the upper lobe of the right lung. On Feb. 12, 1941 there was a noticeable diminution of the hilar density on the right. The anterolateral segment of the upper lobe of the right lung was aerated. On February 21 instillation of iodized oil showed that the upper lobe of the right lung failed to fill, although the middle and lower lobes filled readily. On March 12 exploratory thoracotomy was performed by Dr. A. L. Brown, and an inoperable tumor was seen. Several local metastases lay subpleurally, and there was one on the diaphragm. The growth had encircled the hilar vessels. The patient was advised to have high voltage roentgen therapy, which was performed in April. The total duration of symptoms to the time of writing has been two hundred and forty months.

CASE 9.—C. H., a white man aged 70, first entered the University of California Hospital on Oct. 21, 1928. There was a history of wheezing, and "asthmatic rales" were heard in the chest. Fluoroscopy gave negative results.

The symptoms recurred in 1935, with dyspnea, a definite sense of pressure in the chest and a cough productive of $\frac{1}{2}$ cup of mucoid sputum daily. There was an occasional pain of

pleuritic type in the left anterior part of the chest. In the last eight months before his second entry he became more dyspneic. There was no edema of the ankles or cardiac failure, but wheezing was present.

Physical examination on the second entry, on Nov. 19, 1940, showed signs of atelectasis or inflammation in the left upper part of the chest. Numerous rales, some bronchial, were present.

Bronchoscopy was performed on the day of admission and showed a distortion of the stem of the left bronchus with an upward displacement of the opening of the upper lobe of the left lung. No tumor was seen. Biopsy of a lymph node in the left supraclavicular region showed epidermoid carcinoma. Radiation therapy was not advised, and the patient was discharged. He remained in fairly good condition, without going downhill any farther, until May 16, 1941 (i. e. for six months), when he had a sudden massive pulmonary hemorrhage and died. Postmortem examination showed an epidermoid carcinoma which had excavated in the posterior portion of the upper lobe of the left lung and eroded its bronchus and a large pulmonary vessel in this region. There were metastases to several mediastinal lymph nodes and to the left pleura, one nodule in the liver and a huge cystic metastasis in the spleen measuring 4 inches (10.1 cm.) in diameter. There were no other gross metastases. Duration of symptoms referable to the thorax was one hundred and fifty-one months.

CASE 10.—L. R., a white man aged 68, began in 1930 to have dyspnea on exertion and a chronic slightly productive cough. These symptoms continued for many years, but he considered himself to be in good general health until July 1940, when after an infection of the upper respiratory tract he began to have progressively severe dyspnea and cough. The cough was productive of thin, yellowish, purulent material, blood-streaked every day. There was no loss of weight. Physical examination showed nothing remarkable except numerous tubal rales throughout both lungs. A roentgenogram of the chest in August 1940 showed a heavy, soft, irregular density overlying the lower posterior third of the right lung. In one area this looked like a beginning lung abscess. The patient died four days after entry. The duration of symptoms was one hundred and twenty months. The postmortem examination showed a diffuse carcinoma involving most of the alveoli of the lower lobe of the right lung, with lymphatic pleural involvement and spread to the left lung; the terminal illness was bronchial pneumonia. No distant metastases were present.

CASE 11.—H. M., an inmate of the California State Prison at San Quentin, had roentgenograms of his chest taken because of cough. A routine roentgenogram taken several years before had been negative for tuberculosis, the presence of which was never proved. The symptoms were minimal until the occurrence of hemorrhages which produced death. Serial roentgenograms showed a slowly enlarging tumor together with atelectasis of the upper lobe of the right lung. Death occurred after the illness had lasted thirty months. Postmortem examination showed in the upper lobe of the right lung a large epidermoid carcinoma which had not metastasized but which had obstructed the lobar bronchus.

ABSTRACT OF DISCUSSION

DR. EDWARD J. O'BRIEN, Detroit: This paper is interesting because carcinoma of the lung, existing as long as has been reported by Dr. Goldman, and not detectable with the bronchoscope, is most unusual. As a rule, malignancy of carcinoma is in inverse proportion to its proximity to the main bronchus. In other words, carcinomas detectable with the bronchoscope are less malignant than those located in the periphery of the lung. It is just such surveys as this, and those of Drs. Graham, Tuttle and others, that make the whole picture of carcinoma more confusing. It makes it more difficult to evaluate the results of any of our treatment. There is an ever increasing number of these patients who have had pneumonectomy performed and are still alive after five to seven years, but when we know that some live that long without anything being done, it is difficult to evaluate our results from surgery. About all that is known

about carcinoma of the lung is that it does exist and that, untreated, people will eventually die of it, and that radiation is in most instances only palliative. Pneumonectomy offers the only hope, and the picture following this procedure is not a bright one. In the hands of the best thoracic surgeons in this country and abroad, about 3 to 5 per cent of the patients who are seen and operated on can be salvaged. The immediate operative mortality ranges from 20 to 25 per cent. The picture is more dismal because early diagnosis is not made and I am afraid that, as much as we might hope for it, we never shall get a diagnosis of carcinoma of the lung as early as we do of carcinomas of the breast or the stomach. However, I would not like to give the impression of defeatism. Some can be salvaged. Without surgery, death of these patients is usually a pathetic one with much pain and discomfort. If the medical profession and the public would understand that the condition exists much more frequently than we used to think it did and that if it is found early we can offer some hope, our results in the future will be much better.

THE UTILIZATION AND EFFECT OF ADDED DEXTROSE

IN CASES OF CONTROLLED AND UNCONTROLLED DIABETES

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There is a growing belief that diabetes mellitus is due to a variety of causes. According to one theory, there is a decreased ability to oxidize dextrose and, according to another, there is a disturbance in the liver which increases the output of dextrose. It was thought, therefore, that some cases may be due to the former and others to the latter cause. The administration of extra carbohydrate without added insulin to patients whose diabetes was controlled appeared to be a likely method of differentiating between the two possible types. The extra sugar should not be utilized by the patients who have a decreased ability to oxidize dextrose, whereas it may be utilized by those with disturbance of mobilization. For this reason the carbohydrate content of the diets of 56 patients whose diabetes was controlled and 36 whose diabetes was not controlled was abruptly increased, without an increase in the dose of insulin. Added sugar without extra insulin was administered to 3 depancreatized dogs whose diabetes was partially controlled. Lastly, 8 diabetic patients were studied in a metabolism chamber before and after the administration of extra sugar. The results of these observations are the subject of this report.

EFFECT OF ADDED CARBOHYDRATE ON CONTROLLED DIABETES

The ages of the 56 patients ranged from 15 to 81 years. The quantity of added sugar varied from 20 to 260 Gm., averaging 100 to 150 Gm. daily, and it was administered for from one to one hundred and one days, the period of administration averaging five to ten days. It is to be noted from table 1 that 55 patients utilized the added sugar. The diabetes was moderate to severe in most instances, and the different age groups were adequately represented. Of the 55 who utilized the

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7. This case is presented through the courtesy of Drs. Stanley and Daniels of the California State Prison at San Quentin.

added sugar, 18 showed improvement of the diabetic condition, as evidenced by reduction of the dose of insulin within one to fourteen days by from 5 to 25 units. The severity of the diabetes and the age distribution of the patients who improved are shown in table 2. The 1 patient who did not utilize the added sugar was a white woman aged 79 who five months previously had required 75 units of insulin with a diet containing 150 Gm. of potential dextrose. The diabetes improved, until she was aglycosuric with a diet containing 350 Gm. of potential dextrose and without insulin. The addition of 100 Gm. of carbohydrate to this diet resulted in the excretion of from 7 to 22 Gm. daily.

EFFECT OF ADDED CARBOHYDRATE ON UNCONTROLLED DIABETES

The improvement of the diabetes in some of the cases mentioned suggested that added sugar may aid in freeing the urine of sugar in certain cases in which the diabetes is difficult to control. Carbohydrate in amounts of from 100 to 300 Gm. daily was added, therefore, to diets of 36 patients whose urine contained sugar, because the disease was difficult to control in most instances. It will be noted from table 3 that 35 patients utilized the added sugar and that the different age groups were adequately represented. The urine promptly became free of sugar in 15 instances, and in several the insulin was reduced. The age distribution of these patients and the severity of the diabetes are shown in table 4. The diabetes of the 1 patient who did not utilize the added sugar was not difficult to control. She was a white woman aged 71 whose diabetes had been controlled with an estimated diet and small amounts of insulin. She was given a diet containing 270 Gm. of potential

blood sugar level. A uniform response was not observed. There was an increase in the blood sugar level in 9 cases, in 2 it increased and then declined, in 5 it was not altered and in 13 it declined, as noted in table 5.

EFFECT OF ADDED CARBOHYDRATE ON DEPANCREATIZED DOGS

It has been considered by some investigators that the addition of sugar in cases of diabetes stimulates the pancreas to secrete more insulin. To ascertain whether

TABLE 3.—Number and Age Group of Patients Who Utilized the Dextrose Added to the Diet Without the Diabetes Being Controlled, and the Severity of the Diabetes

Severity of Diabetes	Age Group					Total
	15-25	25-35	35-45	45-55	55-Up	
Mild.....	..	..	..	..	..	3
Moderately severe..	..	..	..	3	..	3
Severe.....	5	5	4	5	13	32
Total.....	5	5	4	8	13	35

TABLE 4.—Age Distribution, Severity of the Diabetes and the Number of Patients Whose Diabetes Improved Following the Administration of Extra Dextrose to Patients with Uncontrolled Diabetes

Severity of Diabetes	Age Group					Total
	15-25	25-35	35-45	45-55	55-Up	
Mild.....	..	..	..	..	..	2
Moderately severe..	..	..	..	2	..	2
Severe.....	2	2	..	2	7	13
Total.....	2	2	..	4	7	15

or not this was the entire mechanism for the utilization of the extra sugar, 50 Gm. of cane sugar was added to the diets of 3 depancreatized dogs whose diabetes was partially controlled by insulin. The utilization of the extra sugar by these animals without added insulin as noted in table 6 excludes the stimulation of the secretion of insulin as the only mechanism for the utilization of the added carbohydrate.

STUDIES OF PATIENTS IN METABOLISM CHAMBER

Eight patients were studied in the metabolism chamber to ascertain the amount of dextrose oxidized when their usual diet and dose of insulin were taken and again after the administration of 50 to 70 Gm. of extra carbohydrate. The amount of extra sugar oxidized varied from 3 to 17.9 Gm. for a four hour period, and the amount oxidized was not related to the age of the patient or to the degree of severity of the diabetes, as shown in table 7.

COMMENT

It is not our purpose to enter into the controversy regarding the use of high carbohydrate diets in the treatment of diabetes mellitus. The addition of carbohydrate to the diet of patients with diabetes mellitus was not of value in the differentiation between the different types of diabetes, if such exist.

The utilization of higher carbohydrate diets without added insulin has been observed by several authors including Sansum, Blatherwick and Bowden,¹ Richard-

1. Sansum, W. D.; Blatherwick, N. R., and Bowden, Ruth: The Use of High Carbohydrate Diets in the Treatment of Diabetes Mellitus, J. A. M. A. 86: 178 (Jan. 16) 1926.

TABLE 1.—Number and Age Group of Patients Who Utilized the Dextrose Added to the Diet After the Diabetes Was Controlled, and the Severity of the Diabetes

Severity of Diabetes	Age Group					Total
	15-25	25-35	35-45	45-55	55-Up	
Mild.....	6	..	..	..	9	15
Moderately severe..	1	..	2	..	7	10
Severe.....	4	2	6	5	8	25
Total.....	11	6	8	6	24	55

TABLE 2.—Number of Patients with Controlled Diabetes Who Improved Following the Administration of Extra Dextrose, the Severity of the Diabetes and the Age Distribution

Severity of Diabetes	Age Group					Total
	15-25	25-35	35-45	45-55	55-Up	
Mild.....	1	..	..	..	1	2
Moderately severe..	1	1	..	..	4	6
Severe.....	1	..	2	2	5	10
Total.....	3	1	2	2	10	18

dextrose, and the insulin was omitted. Glycosuria appeared, and after the addition of 200 Gm. of carbohydrate to this diet the daily urinary dextrose was increased by 14 to 20 Gm.

EFFECT OF ADDED CARBOHYDRATE ON BLOOD SUGAR LEVELS

A sufficient number of blood sugar estimations two hours after breakfast were obtained in 29 cases to ascertain the effect of the added carbohydrate on the

son,² Barach,³ Short,⁴ Poulton,⁵ Fabrykant and Wiener,⁶ Adlersberg and Porges,⁷ Himsworth,⁸ Rabinowitch⁹ and Nixon.¹⁰ An improvement in the diabetes as evidenced by reduction of the insulin requirement has been observed by several of these investigators, but the mechanism of this improvement is not clear. The

TABLE 5.—Effect on the Blood Sugar Level of Adding Dextrose to the Diet of Patients with Diabetes Without Added Insulin

Number.	Blood Sugar Level			
	Increased	Increased, Then Declined	Unaltered	Declined
..	9	2	5	13

TABLE 6.—Utilization of the Added Dextrose for Three Day Periods to Depancreatized Dogs Whose Diabetes Was Partially Controlled

Dog	Before Added Dextrose			After Added Dextrose		
	Average Daily Potential Dextrose Diet, Gm.	Average Daily Insulin Dosage, Units	Average Daily Urinary Dextrose, Gm.	Average Daily Potential Dextrose Diet, Gm.	Average Daily Insulin Dosage, Units	Average Daily Urinary Dextrose, Gm.
1	145	60	11.8	195	60	12.3
2	145	26	16.7	185	23	26.3
3	120	20	7.0	170	20	12.3

improvement in tolerance produced in the diabetic patient by administration of extra sugar and extra insulin by Gibson¹¹ and Ellis¹² and the studies of Adlersberg and Porges,⁷ Sweeney¹³ and others suggest an increased insulin secretion. That this explanation is not entirely adequate is shown by utilization of the extra sugar by the depancreatized dogs.

It appears, therefore, that some other mechanism is involved. Adlersberg and Porges⁷ thought that the storage of glycogen in the liver was an important factor. Ellis¹² suggested that depletion of the sugar stores of the body played a role. Chambers¹⁴ has recently reviewed the subject of the influence of undernutrition in carbohydrate metabolism. It has been shown that the maximum utilization of administered dextrose is found in the normal person when carbohydrate has been supplied abundantly in the diet. The utilization of

dextrose diminishes as the carbohydrate intake is reduced. We¹⁵ have recently shown that the diminished dextrose tolerance curves observed in certain endocrine diseases could be improved by high carbohydrate diets and then diminished by low carbohydrate high fat diets. Most patients with diabetes mellitus have been losing a considerable amount of sugar through the urine by the time the physician is consulted; therefore the sugar stores have been depleted to varying degrees, and there has been a high fat content of the metabolic mixture. It is possible, therefore, that these patients have not only diabetes but in addition a further diminished ability to utilize dextrose secondary to this partial depletion of sugar.

The results of the metabolic studies indicate that there was depletion of sugar in our cases. Three of the patients studied were typical of the patients who received added carbohydrate to their diets. These patients (3, 4 and 7 in table 7) utilized the added 50 and 70 Gm. of sugar without glycosuria, whereas patients 2, 5, 6 and 8 were selected because it was thought that there was no depletion of sugar. Their diabetes had been controlled for several weeks to months prior to study and glycosuria appeared following the addition of sugar. The longer the diabetes had been controlled the greater was the glycosuria. Patients 5 and 8 had been controlled for more than a year and they excreted 12 and 21 Gm. of the added sugar, whereas patients 2 and 6 had been controlled only a few weeks and they excreted 6 and 8 Gm. of the added sugar. The utilization of most of the carbohydrate added to the diets of our patients appears, therefore, to have occurred by deposition into the sugar stores of the body. The improvement in the diabetes as evidenced by the reduction of insulin requirement or by prompt disappearance

TABLE 7.—Amount of the Added Sugar Which Was Oxidized During a Four Hour Period by Eight Patients with Diabetes Mellitus Varying in Degrees of Severity

Case	Age	Insulin Units	Diet Potential Dextrose, Gm.	Non-protein R. Q.	Dextrose Oxidized in 4 Hours, Gm.	Idl. Dextrose, Gm.
1	67	0	56	0.84	22.9	
1	..	0	106	0.87	37.0	41
2	57	0	50	0.87	29.8	
2	..	0	100	0.90	42.7	12.4
3	66	20	56	0.90	40.0	
3	..	20	106	0.90	43.0	..
4	29	15	63	0.83	23.7	
4	..	15	113	0.90	51.4	17.5
5	44	0	100	0.88	38.1	
5	..	0	150	0.97	50.1	17.1
6	42	25	100	0.85	27.7	
6	..	25	140	0.86	26.2	..
7	17	25	67	0.88	11.5	
7	..	25	111	0.96	55.2	17.7
8	18	15	71	0.87	27.1	
8	..	18	121	0.90	1.1	1.1

of sugar from the urine was due probably to correction of the existing sugar depletion. This mechanism does not explain the fact that patients in whom the sugar stores are not depleted will utilize most of the sugar added to their diet.

We have considered it advisable routinely to administer a higher carbohydrate diet for a few days after the urine has been rendered free of sugar in order to correct

2. Richardson, Russell. High Carbohydrate Diets in Diabetes Mellitus, *Am. J. M. Sc.* 177: 426 (March) 1929.

3. Barach, J. H. Lower Fat Diet in Diabetes, *Ann. Int. Med.* 4: 593 (Dec.) 1930.

4. Short, J. J. A System of Weighed High Carbohydrate Diets for Diabetes, *J. A. M. A.* 96: 1940 (June 6) 1931.

5. Poulton, E. P., and others. High Carbohydrate Diets in Diabetes, *Lancet* 1: 351 (Feb. 14) 1931.

6. Fabrykant, Maximilian, and Wiener, H. J. The Effect of Added Carbohydrate on Stabilized Insulin Treated Diabetes, *Am. J. M. Sc.* 199: 834 (June) 1940.

7. Adlersberg, D., and Porges, O. Weitere Erfahrungen über die Behandlung des Diabetes mellitus mit fettarmer Diät, *Klin. Wchnschr.* 6: 2371 (Dec. 10) 1927.

8. Himsworth, H. P. Recent Advances in the Treatment of Diabetes, *Lancet* 2: 978 (Oct. 31) 1931.

9. Rabinowitch, J. M. Pre-ent Status of High Carbohydrate Low Calory Diets for Treatment of Diabetes, *Canad. M. A. J.* 26: 14 (Feb.) 1932.

10. Nixon, J. A. Advantages to the Diabetic of a Diet Rich in Carbohydrate, *Brit. M. J.* 1: 326 (Feb. 22) 1930.

11. Gibson, R. B. Latent Tolerance in Diabetes Mellitus. A Study of the Effect of High Sugar Diets with Insulin on Controlled Diabetics, *J. Lab. & Clin. Med.* 14: 597 (April) 1929.

12. Ellis, Arthur. Tolerance in Diabetics Following the Hourly Periods, *Quart. J. M. Sc.* ..

13. Sweeney, J. S. Dietary Factors That Influence the Dextrose Tolerance Test, *Arch. Int. Med.* 40: 818 (Dec.) 1927.

14. Chambers, W. H. Undernutrition and Carbohydrate Metabolism, *Physiol. Rev.* 18: 248 (April) 1938.

15. Greene, J. A., and Swanson, L. W. Alteration of Glucose Tolerance in Patients with Disease of Pituitary, Thyroid, and Adrenal Glands by Changes of Diet, *J. Lab. & Clin. Med.* 26: 360 (Nov.) 1934.

the existing sugar depletion. The length of time necessary to correct this depletion is not known. It undoubtedly varies in different cases. It required from six days to six months of diet for alteration of the dextrose tolerance curve in some of our cases of hypoglycemia.¹⁰ It is for the same reason in our opinion advisable to administer extra carbohydrate to patients with diabetes which is difficult to control or which is unstable. It is not our opinion that all cases of unstable or difficult to control diabetes are due to sugar depletion, but the diabetes in certain of these patients will become more easily controlled or more stable as the existing sugar depletion is corrected.

It is generally agreed that with an increased metabolic rate there is a greater demand for dextrose. In cases of diabetes mellitus and hyperthyroidism the greater requirement for dextrose will decrease the sugar stores of the body unless the carbohydrate intake is increased. In such cases we have found it advantageous to increase the carbohydrate content of the diet by from 100 to 250 Gm. daily and in most instances the insulin requirement is not increased. A typical illustration is the following case.

A white girl aged 17 years has diabetes and hyperthyroidism. The diabetes was controlled with a diet containing 200 Gm. of potential dextrose and 65 units of insulin daily. The diet was abruptly increased by 300 Gm. of carbohydrate without an increase in the dose of insulin, and the urine remained free of sugar. The insulin requirement gradually decreased 25 units in seventeen days.

There is likewise a greater demand for dextrose during an infection with or without a systemic reaction, and unless the carbohydrate content of the diet is increased the sugar stores of the body will be reduced in proportion to the increased demand. In such cases the addition of extra carbohydrate to the diet will not increase the insulin requirement or will make any increase in requirement due to the infection comparatively less than would be necessary without the added sugar. The patient thereby utilizes a greater amount of dextrose with less insulin. This point is illustrated by the following case.

A white woman aged 48 years had had diabetes for several years which had been controlled with 45 units of insulin daily and a diet containing 150 Gm. of potential dextrose. A severe infection of the hand developed and by the time of admission to the hospital the insulin dosage had been increased to 75 units daily. In spite of this increase in insulin dosage the urine continued to show sugar. The addition of 100 Gm. of carbohydrate to her diet was followed promptly by disappearance of sugar from the urine. There was no apparent improvement in the infection until five days later, following extensive incisions of the hand.

From our previous experience with similar cases the insulin requirement would have increased to approximately 100 or more units daily. Under such circumstances the patient could not have utilized much over 150 Gm. of potential dextrose. The added carbohydrate, however, permitted her to utilize 250 Gm. of potential dextrose with less insulin.

The influence of addition of extra carbohydrate to the diet on the blood sugar level in certain cases is illustrated here:

A white man aged 67 years has diabetes mellitus and arteriosclerotic gangrene of the leg. The diabetes was controlled with

10 units of insulin and a diet containing 170 Gm. of potential dextrose. The blood sugar level two hours after breakfast gradually increased to 397 mg. per hundred cubic centimeters. The addition of 100 Gm. of carbohydrate to the diet reduced the blood sugar to 133 mg. per hundred cubic centimeters by the fourth day; the leg was not amputated until two days later.

SUMMARY

Carbohydrate was added to the usual regimen of patients with controlled diabetes in an unsuccessful attempt to differentiate between possible types of diabetes. Only 1 of the 56 patients failed to utilize the added sugar, whereas 18 required less insulin. Since such an improvement indicated a beneficial effect, extra carbohydrate was added to the diets of 36 patients with uncontrolled diabetes. Only 1 failed to utilize the added sugar, whereas the urine of 15 promptly became free of sugar. There was no uniform response of blood sugar levels.

Studies on patients in the metabolism chamber and on depancreatized dogs show that neither oxidization of the added sugar nor increased secretion of insulin explains the utilization of the added carbohydrate.

It is postulated that depletion of the sugar stores of the body further reduces the ability of many diabetic patients to utilize dextrose and that the correction of this depletion improves the diabetes in such cases.

ABSTRACT OF DISCUSSION

DR. H. O. MOSENTHAL, New York: I desire to confine my remarks to the empirical results of augmenting the starches in the diet. This may prove to be advantageous in treating diabetic patients, especially those resistant to insulin. Apparently through the use of insulin a change has been wrought in the diabetic so that they may respond favorably to increased amounts of carbohydrate. This was not the rule but the exception in the preinsulin days. With the use of insulin, apparently a certain reserve for the utilization of sugar is built up which responds to the stimulus of added carbohydrate by increasing the dextrose tolerance. Without insulin the same occurs in normal persons, but this is not true of untreated patients with diabetes. Dr. Anna Spiegelman and I have recently carried through some experiments which show that, in mild diabetes in which insulin is not required, in some a low carbohydrate diet may serve to build up tolerance, while in others an optimal diet which may vary from 150 to 400 Gm. of carbohydrate intake may serve that purpose. What seems to me particularly significant is the result obtained in cases of infections and hyperthyroidism. In these states characterized by more or less insulin resistance the effectiveness of insulin can be enhanced according to Greene and Swanson by the giving of high carbohydrate diets. The principle of satisfactory utilization of added dextrose in cases of both controlled and uncontrolled diabetes and of insulin resistant cases can be hailed as a step forward in the management of diabetes. There is no set diet which is most advantageous for any diabetic patient and it is a matter of trial and error to determine what shall be most beneficial. Diets low in carbohydrate are successful in controlling the carbohydrate metabolism of obese diabetic patients, higher carbohydrate diets are established as the most advantageous for growing children and for the manual laborer, while medium carbohydrate diets containing 130 to 150 Gm. of starch are usually considered most suitable for sedentary workers.

DR. DAVID ADLERSBERG, New York: I would like to compliment Drs. Greene and Swanson on their interesting paper. Dr. Greene was kind enough to quote the work that Porges and I did years ago on the same subject. Experiments of this type, with addition of dextrose or other carbohydrates to the diet of normal and diabetic persons, with or without insulin, were the first steps which eventually led to the introduction of high carbohydrate diets in the treatment of diabetes. One of

10. Swanson, L. W., and Greene, J. A.: Further Observations on the Role of Diet in the Etiology and Treatment of Spontaneous Hypoglycemia, *J. Lab. & Clin. Med.* 26: 828 (Feb.) 1941.

our first papers on the use of high carbohydrate diets in diabetes, published fifteen years ago, was entitled "Glycogen Storage as the Aim of Insulin Therapy." The important part of Drs. Greene and Swanson's paper is the demonstration that the added dextrose is apparently only stored and not oxidized. It is particularly interesting that this has been proved in the diabetic patient as well as in the depancreatized dog. Almost everywhere the carbohydrate ratios have been considerably raised to the benefit and convenience of the patients. I agree with Dr. Mosenthal that especially those diabetic patients who present complications with resistance to insulin therapy are entitled to high carbohydrate diets. The increased carbohydrate intake may have a striking effect and cause normal response to insulin.

TOXIC EFFECTS FOLLOWING THE USE OF MAPHARSEN

A REVIEW OF THE LITERATURE SINCE 1935

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AND

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A summary of the literature on the toxic effects of mapharsen is presented in this paper. Since 1932 over twelve million doses of this drug have been distributed. Some of these have caused mild, some severe and some fatal reactions.

A study of the literature since 1935 shows that certain reactions of the drug are similar to those of arsphenamine and neoarsphenamine. It is particularly to be noted that the fatalities from mapharsen are few; only six deaths have been reported. Severe reactions—such as thrombopenic purpura, aplastic anemia and granulocytopenia as well as liver damage, nitritoid crisis, hemorrhagic encephalitis and exfoliative dermatitis—are rare. Many patients who were intolerant to other arsenicals did tolerate mapharsen.

University of California Clinic.—Approximately 35,000 injections of mapharsen were given at the University of California syphilis clinic between 1934 and 1940. Mild disturbances such as nausea, vomiting, pain in the arm and pruritic erythematous eruptions, as recorded by Miller, Epstein and Simpson¹ for the years 1934 to 1936, have continued to be the most frequent reactions. There have been no deaths. The milder reactions were usually easily controlled. Rapid injection has decreased the incidence of pain in the arm, which was a frequent complication when the drug was given slowly.

REVIEW OF THE LITERATURE

For the most part, the reports of the different investigators have been compiled so as to indicate the number of patients who had reactions. Unfortunately much valuable material had to be discarded because of lack of specific information. The fatalities are recorded in detail. For all other reactions a systemic classification has been followed.

Dermatitis.—The incidence of cutaneous reactions among 13,769 patients who received 240,811 injections of mapharsen is recorded here as a summary of several

reports.² Pruritus occurred in 84 cases, a ratio of 1:163; scaling and erythematous eruptions of moderate and mild degree occurred in 70, a ratio of 1:196; urticaria in 27, a ratio of 1:509; edema of the face and body in 14, a ratio of 1:983; exacerbation of previously existing dermatitis in 5, a ratio of 1:2,754; fixed eruptions in 5, a ratio of 1:2,754; exfoliative dermatitis in 16, a ratio of 1:861. In 3 reported cases of exfoliative dermatitis³ neoarsphenamine had been given previously. It is assumed that these 3 patients did not react to the previous medication. A total of 223 patients, a ratio of 1:62, showed some degree of cutaneous sensitivity to mapharsen.

Fixed eruptions from the arsphenamines⁴ are likely to recur if mapharsen is given. Chargin⁵ and others⁶ tested 55 patients who had reacted to the arsphenamines with fixed eruptions. Forty, or 72.7 per cent, showed sensitivity to mapharsen by flaring of the previous eruption at the fixed site.

Schoch, Alexander and Long⁷ recently reported their experience with the administration of mapharsen to patients who had recovered from arsphenamine dermatitis. In addition to their 40 cases, 35 were reported by others.⁸ Of 54 patients who recovered from dermatitis of mild or moderate degree as a cutaneous reaction to one of the arsphenamines, 46, or 85.1 per cent, tolerated mapharsen after recovery. Among 21 patients with severe exfoliative dermatitis, only 2, or 9.5 per cent, later tolerated mapharsen without recurrence.

Gastrointestinal Reactions.—The incidence of gastrointestinal reactions from mapharsen was recorded in 5,348 cases.⁹ In this group the incidence of patients having mild reactions was 1:15 and of those having severe reactions was 1:334.

Following 38,416 injections of mapharsen given by various investigators¹⁰ there were 1,002 gastrointestinal reactions, a ratio of 1 reaction to 38 doses.

The tolerance to mapharsen of 134 patients who had repeated or severe gastrointestinal reactions to the

2. Astrachan, G. D.: Mapharsen in Antisyphilitic Therapy, *Am. J. Syph., Gonorr. & Ven. Dis.* 21:81 (Jan.) 1937. Chargin, Louis: Extensive Fixed Arsphenamine Eruption, *Arch. Dermat. & Syph.* 37:144 (Jan.) 1938. Gruhitz, O. M.; Dixon, R. S., and others: Mapharsen in Mass Treatment of Syphilis in a Clinic for Venereal Diseases, *Am. J. Syph. & Derm.* 4:332 (Sept.) 1936. Astrachan and Wise,³¹ Cole and Palmer,³² Foerster, McIntosh, Wiedner, Foerster and Cooper,³³ Howles,³⁴ Marshall,³⁵ Rajam and Rao,³⁶ Rein and Wise,³⁷ Stephenson and Anderson,³⁸ Stephenson and Chambers.³⁹

3. Stephenson, C.: Toxic Effects of Arsenical Compounds as Adjuvant Reference to Arsenic, *W. M. Bull.* 38:587 (Oct.) 1940. Stephenson, C.: Arsenical Compounds Special Reference to d. 37:687 (Oct.) 1937.

4. Arsphenamine, neoarsphenamine, silver arsphenamine and arsphenamine.

5. Chargin, Louis, and Leifer, William: Fixed Eruptions Due to the Arsphenamines, *J. Invest. Dermat.* 2:443 (Dec.) 1940.

6. Jordan, J. W., and Traenkle, H. L.: Reactions to the Arsphenamines, Special Reference to Its Use in Patients Who React to the Arsphenamines, *Arch. Dermat. & Syph.* 36:1158 (Dec.) 1937. Mendelsohn, Victor: Fixed Eruption with an Extracutaneous Manifestation Due to Mapharsen, *ibid.* 41:509 (March) 1940. Vero, Frank: Fixed Eruption Due to Arsenic, *ibid.* 25:307 (Feb.) 1937. Chargin.⁵

7. Schoch, Arthur G.; Alexander, Lee J., and Long, W. E.: Mapharsen in the Treatment of Forty Patients Following Arsphenamine Dermatitis, *Arch. Dermat. & Syph.* 42:919 (Nov.) 1940.

8. Kulchar, G. V., and Barnett, Charles W.: Mapharsen in the Treatment of Early Syphilis, *Am. J. Syph.* 20:482 (Sept.) 1936. Astrachan and Wise,³¹ Cole and Palmer,³² Gruhitz, Dixon and others,³³ Jordan and Traenkle,³⁴ Marshall,³⁵ Miller, Epstein and Simpson,¹ Parsons,³⁶ Rein and Wise,³⁷ Stephenson and Chambers,³⁸ Wiedner, Foerster and Foerster.³⁹

9. Morgan, Edward A.: The Value of Mapharsen in the Treatment of Congenital Syphilis, *Canad. M. A. J.* 38:53 (Jan.) 1938. Astrachan,³¹ Cornell and Astrachan,³² Foerster, McIntosh, Wiedner, Foerster and Cooper,³³ Gruhitz, Dixon and others,³⁴ Marshall,³⁵ Parsons,³⁶ Rein and Wise,³⁷ Wiedner, Foerster and Foerster.³⁹

10. Schmidt, L. E., and Taylor, G. G.: The Treatment of Syphilis with Mapharsen, *Am. J. Syph., Gonorr. & Ven. Dis.* 21:412 (July) 1937. Astrachan,³¹ Astrachan and Wise,³² Cornell and Astrachan,³³ Howles,³⁴ Kato,³⁵ McIntosh, Wiedner, Foerster and Cooper,³⁶ Marshall,³⁷ Rajam and Rao,³⁸ Barnett,³⁹ Morgan,⁴⁰ Parsons,⁴¹ Rajam and Rao.⁴²

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Read before the Section on Dermatology and Syphilology of the California Medical Association at the seventeenth annual session, Del Monte, May 6, 1941.

1. Miller, H. E.; Epstein, N. N., and Simpson, R. G.: Mapharsen: Its Use in the Treatment of Syphilis, *California & West. Med.* 43:321 (Oct.) 1936.

arsphenamines has been reported.¹¹ Of these, 118 patients, or 88.1 per cent, were able to tolerate mapharsen in therapeutic doses.

Jaundice as a complication of mapharsen therapy was reported in some of the series.¹² Among 10,370 patients, one of every 450 had jaundice during therapy. The jaundice was mild and disappeared within three to eight weeks.

TABLE 1.—Fatalities Following Mapharsen Therapy

Author	Date of Publication	Patient's Age at Death		Doses	Primary Cause of Death
		Sex	Age		
Cole and Palmer ²¹	1937	♂	32	Mapharsen, 40 ⁹ (1.5 Gm.)	Acute nephrosis
Simon and Iglauer ²¹	1939	♂	45	Neosarsphenamine, 8 mapharsen, 5	Nephrosis with interstitial nephritis
Rajam and Rao ¹⁵	1939	♂	47	Mapharsen, 2	Hemorrhagic encephalitis
Rein and Wise ¹⁶	1939	♀	32	Mapharsen, 5	Granulocytopenia
		♀	70	Mapharsen, 20	Aplastic anemia
Kirkham and Perlmutter ¹⁵	1941	♀	24	Mapharsen, 20	Aplastic anemia

Blood Dyscrasias.—Five mild reactions were reported, three of purpura and two of "involvement of the hemopoietic system."¹³

Epstein and Falconer¹⁴ stated that mapharsen has serious potentialities for injuring the bone marrow. One patient had a "so-called aplastic anemia after five doses of mapharsen. She had a well marked anemia before mapharsen was given and undoubtedly her bone marrow was vulnerable."

Three fatalities were reported,¹⁵ two from aplastic anemia and one from agranulocytosis.

The hemopoietic toxicity resulting from mapharsen apparently is somewhat different from that resulting from neosarsphenamine. Mapharsen may be tolerated after neosarsphenamine has produced profound toxic effects. Seven patients with thrombocytopenic purpura,¹⁶ 1 patient with purpura but no reduction in platelet count¹⁷ and 2 patients who recovered from granulocytopenia¹⁸ as reactions to neosarsphenamine showed no signs of toxicity when mapharsen was given.

11. Parsons, R. P. An Estimate of Arsenoxide (Mapharsen) in the Treatment of Early Syphilis. U. S. Nav. M. Bull. 35: 207 (April) 1937. Astrachan.² Jordan and Traenkle.⁶ Marshall.²⁵ Miller, Epstein and Simpson.¹ Rein and Wise.¹⁵ Roth and Creswell.²⁵ Wieder, Foerster and Foerster.²²

12. Stephenson, C. S., and Anderson, L. T. Toxic Effects of Arsenical Compounds as Employed in the Treatment of Disease in the U. S. Navy, 1939. U. S. Nav. M. Bull. 39: 139 (Jan.) 1941. Astrachan.² Chargin.²⁵ Foerster, McIntosh, Wieder, Foerster and Cooper.¹⁸ Gruhitz, Dixon and others.² Jordan and Traenkle.⁶ Morgan.⁹ Rajam and Rao.¹⁵ Rein and Wise.¹⁵

13. Astrachan, G. D., and Wise, Fred: Further Experiences with Mapharsen; Its Use in Latent Syphilis, Am. J. Syph. 22: 470 (July) 1938. Astrachan.² Howles.²⁰

14. Epstein, N. N., and Falconer, E. H.: Effects of Neosarsphenamine and Mapharsen on Formed Elements of Blood. Granulocytopenia Following Neosarsphenamine Therapy in a Patient Who Subsequently Received Mapharsen Without Untoward Reaction, Arch. Dermat. & Syph. 42: 909 (Nov.) 1940.

15. Kirkham, Dunham, and Perlmutter, Martin: Fatal Aplastic Anemia Following the Use of Mapharsen—Report of a Case, Arch. Dermat. & Syph. 42: 111 (Jan.) 1941. Rajam, R. V., and Rao, N. V. Mapharsen in the Treatment of Syphilis, Indian M. Gaz. 74: 24 (Jan.) 1939. Rein, C. R., and Wise, Fred: Mapharsen in Treatment of Syphilis in Office Practice, J. A. M. A. 113: 1946 (Nov. 25) 1939.

16. Falconer, E. H., and Epstein, N. N.: Purpura Hemorrhagica Due to the Arsenphenamines, Arch. Int. Med. 66: 319 (Aug.) 1940. Falconer, E. H., Epstein, N. N., and Meyer, G. K.: Purpura Hemorrhagica Following Administration of Neosarsphenamine. The Reaction to Neosarsphenamine Compared with the Reaction to Mapharsen, Arch. Int. Med. 58: 495 (Sept.) 1936.

17. Sexton, G. B.: Caution in Arsenphenamine Therapy, Canad. M. A. J. 40: 375 (April) 1939.

18. Goldberger, Mortimer: Mapharsen as a Substitute for Neosarsphenamine in the Treatment of Early Syphilis, Arch. Dermat. & Syph. 42: 79 (Jan.) 1940.

Nephrosis.—Some reports indicate that subclinical mild kidney damage may occur during mapharsen therapy.¹⁹ Examination of the urine showed such evidence in 9 of 597 patients, a ratio of 1:64. Howles²⁰ reported that 1 patient with acute nephrosis had congenital syphilis and received concurrent mapharsen and bismuth therapy. Mapharsen is not especially nephrotoxic, although two deaths due to kidney damage were attributed to its use.²¹

Vasomotor Reactions.—It is difficult to state whether or not any true nitritoid reactions are caused by mapharsen. There are reports of 15 cases in which vasomotor reactions occurred.²² These reactions were described as "abdominal cramps, generalized aching, flushing and rapid pulse"; "shock, pallor, weakness, nausea and vomiting"; "vascular crises closely resembling a 'nitritoid'"; "headache, general malaise, high fever." It may be inferred that no true nitritoid reaction has been described in the literature. It is interesting to note, however, the reports of 42 cases in which there were severe, repeated nitritoid crises from the arsphenamines.²³ These patients tolerated mapharsen without any reaction resembling a nitritoid crisis.

Miscellaneous Reactions.—A large group of miscellaneous reactions was reported by various authors.²⁴ These were vertigo, headache, chills, lacrimation, salivation, chest pain and pain in the teeth and gums. Locally venous spasm and pain in the arm were noted.

Toxic Effects of Mapharsen as Compared to Neosarsphenamine Which Occur During Massive Arsenotherapy by the Continuous Intravenous Drip Method.—The observations already recorded indicate that mapharsen is less toxic than neosarsphenamine when

TABLE 2.—Toxic Reactions and Deaths: Neosarsphenamine Compared with Mapharsen (United States Naval Reports, 1925-1939)

	Total Doses	Reactions				Ratio Reactions : Deaths	Ratio Doses : Doses
		Mild	Severe	Fatal	Total		
Neosarsphenamine	1,301,913	618	301	49	968	1:1,345	1:26,570
Mapharsen. . . .	121,680	14	8	0	22	1:5,531	0

administered in the usual manner. It is also less toxic when given by continuous intravenous drip method.²⁵ Of 111 patients who received neosarsphenamine, 45 per

19. Foerster, O. H., McIntosh, R. L., Wieder, L. M.; Foerster, H. R., and Cooper, G. A.: Mapharsen in the Treatment of Syphilis, Arch. Dermat. & Syph. 32: 868 (Dec.) 1935. Astrachan.² Cornell and Astrachan.²⁴ Howles.²⁰ Rein and Wise.¹⁵

20. Howles, James R.: The Treatment of Congenital Syphilis with an Intravenous Arsenical. An Analysis of 204 Cases, South. M. J. 32: 940 (Sept.) 1939.

21. Cole, H. N., and Palmer, R. B.: Mapharsen in the Treatment of Syphilis, Arch. Dermat. & Syph. 36: 561 (Sept.) 1937. Simon, S. D., and Iglauer, A.: Death Following Mapharsen Therapy—Report of a Case, Am. J. Syph. Gonorr. & Ven. Dis. 23: 612 (Sept.) 1939.

22. Hall, E. R.: Comparative Aspects in the Treatment of Syphilis, J. Tennessee M. A. 31: 388 (Oct.) 1938. Wieder, L. M.; Foerster, O. H., and Foerster, H. R.: Mapharsen in the Treatment of Syphilis. Further Studies, Arch. Dermat. & Syph. 35: 402 (March) 1937. Cole and Palmer.²¹ Morgan.⁹ Stephenson and Anderson.¹² Stephenson and Chambers.¹²

23. Marshall, J. W.: The Treatment of Syphilis with Mapharsen, Am. J. Syph. Gonorr. & Ven. Dis. 21: 645 (Nov.) 1937. Roth, George B., and Creswell, George W.: Chemobiological and Clinical Behavior of Arsenoxide (Mapharsen), M. Ann. District of Columbia 6: 195 (July) 1937. Astrachan.² Jordan and Traenkle.⁶ Rein and Wise.¹⁵

24. Cornell, Van A., and Astrachan, G. D.: Mapharsen in the Treatment of Congenital Syphilis, Arch. Dermat. & Syph. 38: 943 (Dec.) 1940. Astrachan.² Astrachan and Wise.¹⁵ Foerster, McIntosh, Wieder, Foerster and Cooper.¹⁸ Gruhitz, Dixon and others.² Howles.²⁰ Kulchiar and Barnett.²⁵ Marshall.²⁵ Rajam and Rao.¹⁵ Rein and Wise.¹⁵

25. Chargin, Louis: Toxicological Manifestations Occurring in Massive Arsenotherapy in Early Syphilis by the Continuous Intravenous Drip Method, Arch. Dermat. & Syph. 42: 248 (Aug.) 1940.

cent had some form of dermatitis, a complication which developed in only 11 per cent of 288 patients who received mapharsen. One case of exfoliative dermatitis occurred after administration of neoarsphenamine, none after mapharsen. Jaundice occurred in 3.6 per cent of the patients who received neoarsphenamine and in 0.7 of those who received mapharsen. A high incidence of peripheral neuritis, 35 per cent, occurred with neoarsphenamine but only 1.6 per cent with mapharsen. One case of hemorrhagic encephalitis occurred in each group; the 1 due to neoarsphenamine was fatal.

Death Rate from Mapharsen.—Two of the 6 cases in which deaths occurred were published as single case reports. The remaining four deaths occurred in a series of 15,752 patients. The ratio is one death among 3,938 patients. The total number of injections accounted for in this review of the literature is 269,326. The ratio is one death to 67,332 injections. It should be noted that the 269,326 injections represent only about 2 per cent of the amount of mapharsen that had been distributed. If it is assumed that all the manufactured doses had been given, and if only six deaths occurred, then the lowest possible rate is one death to two million injections.

Mapharsen and Neoarsphenamine.—Any significant comparison of the toxicity of these two drugs should be made in groups of similar patients given the same routine treatment. Therefore the reports of the United States Navy on the treatment of young, comparatively healthy males is of value (table 2). Neoarsphenamine definitely is the more toxic. There were no deaths following 121,689 injections of mapharsen, whereas forty-nine deaths followed 1,301,913 injections of neoarsphenamine.

The death rate, according to the literature, is one to 67,332 injections of mapharsen. This is less than one half the death rate from neoarsphenamine.

CONCLUSIONS AND SUMMARY

1. A review of the literature shows that mapharsen is less toxic than neoarsphenamine.

2. To date only six fatalities from mapharsen have been reported. This rate is remarkably low considering that over twelve million ampules of mapharsen have been manufactured. The deaths were reported as due to kidney damage in 2 cases, hemorrhagic encephalitis in 1, aplastic anemia in 2 and acute agranulocytosis in 1.

3. Patients who have mild or moderate cutaneous reactions to the arsphenamines usually (in about 85 per cent) can tolerate mapharsen. However, those who have true exfoliative dermatitis almost always (in 90 per cent) react similarly to mapharsen. It is probably not justifiable, then, to use mapharsen for a patient who has had a severe exfoliative dermatitis from arsphenamine. A mild or moderate degree of dermatitis does not contraindicate the trial of mapharsen when arsenicals are deemed essential.

4. About 90 per cent of the patients who have severe gastrointestinal reactions to the arsphenamines can tolerate mapharsen in therapeutic doses.

5. Symptoms suggestive of nitritoid reaction have been reported but no case of true nitritoid reaction from mapharsen has been described. It is interesting to note that 42 patients who had severe nitritoid reactions from the arsphenamines were able to tolerate mapharsen without difficulty.

6. Toxidermia was noted in about 1.5 per cent of 13,769 patients who had received 240,811 injections of

mapharsen. The incidence of exfoliative dermatitis in this group was 0.11 per cent. Not one of these was fatal.

7. Seven patients with thrombocytopenic purpura and 2 patients with granulocytopenia from neoarsphenamine were able to tolerate mapharsen without reaction. Mapharsen may occasionally cause severe damage to the hemopoietic system.

8. Careful observation of the use of mapharsen and neoarsphenamine by the intravenous drip method showed that mapharsen causes fewer and milder toxic reactions than neoarsphenamine.

9. The United States Navy statistics on observations of reactions to neoarsphenamine and to mapharsen among patients comparable as to age, sex and general condition of health indicate that mapharsen is definitely the less toxic.

GLOBULIN FRACTIONS OF A AND B AGGLUTINATING SERUMS FOR BLOOD TYPING

A RAPID CARD TECHNIC FURNISHING A
PERMANENT RECORD

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It is well known that it is difficult to secure large amounts of high titered A and B serums for determining blood groups. It is especially difficult to secure satisfactory A serum.

Since it has been demonstrated that antibodies can be concentrated by various methods of globulin fractiona-

tion, globulin fractions were prepared of pooled type A and pooled type B serums in the attempt to concentrate these specific isoagglutinins. It was felt that if this could be accomplished it would not be necessary to secure high titered agglutinating serums from the small percentage of individuals who yield these, but the agglutinins could be concentrated sufficiently in the globulin fraction from pools of low titered serums.

It has been found, as the study progressed during the past two years, that it was extremely easy to accomplish this.

One or two liter pools were prepared, and the agglutinin titer of each individual serum, as well as that of the unconcentrated pool and the globulin fractions:

Patient's blood type	A serum	B serum
O		
A		
B		
AB		

Permanent record. International nomenclature is used for blood groups.

From the Manhattan Convalescent Serum Laboratory and the Bureau of Laboratories, New York City Department of Health.
1. Mr. Eugene Cardone, of the Bureau of Laboratories, New York City, prepared these globulin fractions.

which resulted, was determined by Davidson's technic.² At times we purposely worked with serum of a very low titer; at other times we made pools of ten or more serums as we obtained them and determined their titer later, along with that of the unconcentrated pool and the globulin fraction. The last two pools prepared may serve as an illustration, and these results are given in the accompanying table (tables 1 and 2). The agglu-

TABLE 1.—Titration of Serums Included in Type A Pool for Globulin Fraction 14

A Serum	Cells	17	114	128	156	1112	1224	1448	1896	1,792	1- Con- trol
F891	B	+	+	+	—	—	—	—	—	—	—
F936	B	+	+	+	—	—	—	—	—	—	—
217F.	B	+	+	+	—	—	—	—	—	—	—
215F.	B	+	+	+	+	—	—	—	—	—	—
790A.	B	+	+	+	—	—	—	—	—	—	—
850A.	B	+	+	+	+	—	—	—	—	—	—
938A.	B	+	+	+	+	—	—	—	—	—	—
978A.	B	+	+	+	—	—	—	—	—	—	—
AA13	B	+	+	+	+	—	—	—	—	—	—
AA15	B	+	+	+	—	—	—	—	—	—	—
AA18.	B	+	+	+	+	—	—	—	—	—	—
AA23.	B	—	—	—	—	—	—	—	—	—	—
AA27.	B	+	+	+	+	—	—	—	—	—	—
AA38	B	+	+	+	—	—	—	—	—	—	—
A 139.	B	+	+	+	—	—	—	—	—	—	—
AA40	B	+	+	—	—	—	—	—	—	—	—
AA41.	B	+	—	—	—	—	—	—	—	—	—
AA44.	B	+	+	+	—	—	—	—	—	—	—
AA58.	B	+	+	—	—	—	—	—	—	—	—
AA62.	B	+	+	+	+	—	—	—	—	—	—
AA70	B	+	+	+	—	—	—	—	—	—	—
G F 14.	B										
Uncon- centrated	B	+	+	+	+	—	—	—	—	—	—
Concen- trated	B	+	+	+	+	+	+	—	—	—	—

Several hundred individual type A serums have been tested, and the titer has been found to vary from 1:7 to 1:448

tinating titers of some of the globulin fractions were found to be quite high, up to 1:3,584 (table 3). However, some extremely efficient globulin fractions had only a moderately elevated agglutinating titer. The final criteria of the test are the rapidity with which macroscopic agglutination appears and the size of the clumps. There has been no difficulty in preparing fractions which will show easily detectable agglutination in five seconds or less, and within twenty to thirty seconds large clumps will have formed. There is a general trend of correlation of the titer of the isoagglutinins and the rapidity of macroscopic agglutination, but the correlation is not exact. The two globulin fractions, numbers 14 and 15, are just as rapid and reliable as others with higher agglutinin titer.

At different times ammonium sulfate and sodium sulfate precipitation of the globulin has been carried out. The results indicate that a better preparation with better keeping qualities results from sodium sulfate precipitation.

The globulin fraction is concentrated four or six times the original pooled serum. To some fractions 0.25 per cent phenol and 1:20,000 merthiolate were added, and others were prepared without preservative. Both were found satisfactory. The preparations were clarified by passing through a Buchner funnel containing paper pulp and filtercel, and then through a clay filter which holds back bacteria. The final preparation is placed in vials, is clear and has very much the appearance of

slightly concentrated serum. This sterile, vialled material has not deteriorated when kept in a refrigerator at plus 5 C. for at least six months.

METHOD OF DETERMINING THE BLOOD TYPE

A drop of type A serum and a drop of type B serum are placed on a card.³ These drops should be about 5 mm. in diameter. The blood used in the test is obtained from the patient's finger. Place a drop of blood about 2.5 mm. in diameter next to each drop of typing serum. Mix thoroughly with a toothpick, spreading the mixture to a circle about 1.5 cm. in diameter. Rotate the card slowly until maximum agglutination has occurred and then allow the drops to dry.

Blood groupings carried out in this manner shown in the illustration, furnish a permanent record which can be attached to the history sheet. The mixture of blood and serum absorbs slightly into the paper and this film is almost impossible to remove from the paper when completely dry.

The blood grouping serums may be differentiated by adding aqueous methylene blue to the B serum and eosin to the A serum.

Since drops of serum can be dried on a card and redissolved with water or physiologic solution of sodium chloride at the time of performing the test, a study was made of how long the drops of dried serum could be relied on. It was hoped that the dried serum would retain its specific efficiency for a long period. Some of the cards with dried serum on them were kept at room temperature, some in the icebox and some in the thermostat. Unfortunately, it was found that the efficiency of the dried serum could not be relied on for longer than three to seven days. It might be that if the cards of dried serum were kept under special conditions in an oxygen free atmosphere and perhaps in the icebox, the

TABLE 2.—Titration of Serums Included in Type B Pool for Globulin Fraction 15

B Serum	Cells	17	114	128	156	1112	1224	1448	1896	1,792	1- Con- trol
BB174	A	+	+	+	+	+	+	—	—	—	—
884A.	A	+	+	+	+	+	+	—	—	—	—
AA28.	A	+	+	+	+	+	+	—	—	—	—
AA29.	A	+	+	+	+	+	+	—	—	—	—
AA31.	A	+	+	+	+	+	+	—	—	—	—
AA37.	A	+	+	—	—	—	—	—	—	—	—
AA75.	A	+	+	+	+	+	+	—	—	—	—
AA80.	A	+	+	+	—	—	—	—	—	—	—
2569.	A	+	+	—	—	—	—	—	—	—	—
2571.	A	+	+	+	+	+	+	—	—	—	—
2581.	A	+	+	+	+	+	+	—	—	—	—
2611.	A	+	+	+	+	+	+	—	—	—	—
2621.	A	+	+	+	+	—	—	—	—	—	—
2659.	A	+	—	—	—	—	—	—	—	—	—
G. F. 15.	A										
Uncon- centrated	A	+	+	+	+	+	+	—	—	—	—
Concen- trated	A	+	+	+	+	+	+	—	—	—	—

Several hundred individual type B serums have been tested, and the titer has been found to vary from 1:28 to 1:3,584.

efficiency would last longer. Even if this occurred, it would not be practical for routine use.

However, these A and B globulin fractions have been dried out of the frozen state in vials and this dried

3. The idea for performing this test on cards or paper suggested itself to one of us when Dr. M. Ruiz Castaneda demonstrated his technic of the Weil-Felix agglutinating test for typhus fever in his laboratory in Mexico City. Dr. Castaneda places a large drop of a heavy suspension of killed proteus X organisms, suspended in a solution of methylene blue, on a piece of glazed paper, and adds to that a large drop of the patient's blood obtained from a finger prick. These are mixed rapidly and in the positive cases agglutination occurs rapidly. The blue stained clump stands out sharply on a slightly pinkish blue background.

2 Davidson, Israel: Test for Infectious Mononucleosis, Am J Clin Path., Tech. Supp. 2: 56-60 (April) 1938.

material has proved entirely satisfactory. A small amount of this dried powder, making a small mound 4 or 5 mm. in the base and about 2 mm. high, is placed on the card and one or two drops of distilled water added to it. These are mixed with a toothpick and the powder readily dissolves in not more than a minute. The test is then carried out as described. Some of this material has been kept at room temperature in a bottle filled with atmospheric air for several weeks and has shown no deterioration. The dried material has been redissolved in the vial by adding distilled water and has proved satisfactory.

The preparations are equally reliable when used on glass slides with dilute suspensions of blood or cells for the usual microscopic tests. In fact, dilution of the globulin fraction to one half with physiologic solution of sodium chloride at times produces an even sharper microscopic agglutination.

SUMMARY

This study has demonstrated that blood group specific isoagglutinins for determining blood types can be greatly concentrated by the usual method of globulin fractionation with sodium sulfate. When the globulin fraction is prepared from the usual low titered serums encountered, concentration from four to six times of the

TABLE 3.—*Agglutinating Titers of Globulin Fractions Before and After Concentration*

Globulin Lot No.	Blood Group	Titer Before Concentration	Titer After Concentration	Final Concentration
7.....	A	1 : 56	1 : 1,792	5.14
10.....	A	1 : 112	1 : 448	5.75
11.....	B	1 : 224	1 : 3,584	5.75
14.....	A	1 : 56	1 : 224	5.9
15.....	B	1 : 112	1 : 224	4.4

filtered sterile globulin solution yields a clear preparation which is completely satisfactory and reliable for either macroscopic or microscopic determination of blood groups.

Preparations are easily obtainable which show detectable macroscopic agglutination of red cells in five seconds, with the formation of large clumps in twenty to thirty seconds. The macroscopic test can be carried out on the usual type of filing card or on paper which is not too porous. The tests are easy to read when still in the wet state, both positives and negatives being clearcut. When allowed to dry, the negative tests sometimes assume a finely granular appearance, which, after experience, should be easily differentiated from the positive tests.

Tests can be allowed to dry, after which the cells adhere with tenacity to either the paper or the card and can be rubbed off only with great difficulty. Therefore the original test can be kept as a permanent record with the patient's history.

Instruction for performing the test can be printed on large cards or history sheets with a diagram for determining each of the four groups. With but little demonstration, interns and technicians can easily learn to carry out this test at the time of the original physical examination of the patient, and this can be filed with the patient's history as a permanent record of his blood type.

Fifteenth Street and East River.

Clinical Notes, Suggestions and New Instruments

STREPTOCOCCUS VIRIDANS SEPTICEMIA

A CURE WITH SULFAPYRIDINE

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As time goes by in this sulfonamide era it becomes increasingly obvious that a vast, ever increasing field in the future realm of therapy lies not in the operating room but in the chemistry laboratory, where the transmutation of metals is as naught compared with the evolution of ideas as they pass through the crucible of new interpretation. The case to be presented is one of *Streptococcus viridans* septicemia, proved by four positive blood cultures. The patient was discharged from the hospital cured, as evidenced by six negative blood cultures and by normal physical and laboratory examinations.

REPORT OF CASE

E. A., aged 20, a private in Battery F, 125th Field Artillery, 34th Division, whose general health had always been excellent, entered the Station Hospital, Camp Claiborne, Louisiana, on March 14, 1941, complaining of "flat feet." Two days later, during convalescence from a mild nasopharyngitis, there was an elevation of temperature to 100 F., a white blood cell count of 10,000 and constant pain over McBurney's point. An acutely inflamed, nonsuppurative appendix was removed through a McBurney incision under spinal anesthesia augmented by ether inhalation. Convalescence was progressing uneventfully until the third postoperative day, when pleurisy and bronchopneumonia developed in the lower lobe of the right lung. This diagnosis was confirmed by roentgenograms. The patient was given sulfathiazole 4 Gm. immediately, then 1 Gm. every four hours for the next forty-eight hours, at the end of which time he complained of severe pain precordially and in the left shoulder. Inspection of the chest revealed a bulge in the left parasternal region, over which a to and fro grating sensation was detected on palpation and a loud rough sound on systole and diastole transmitted to the left axilla and posteriorly to the angle of the left scapula on stethoscopic examination. Valvular sounds could not be evaluated because of extreme precordial noises. The blood pressure was 100 systolic and 80 diastolic. Percussion revealed the left border of the heart to extend to the left anterior axillary line. Retromammary dullness measured 8 cm. A 6 foot heart plate was confirmatory for pericardial effusion. The cardiothoracic ratio was 67. The electrocardiogram revealed low voltage in all QRS complexes and barely positive T₁ and T₂, with an isoelectric T₃. A blood culture was taken. Two days later T₁ and T₂ were negative, T₃ isoelectric and T₄, which previously had been positive, was now also negative.

Five days after the onset of the pericarditis the blood culture revealed a growth of *Streptococcus viridans* hemolyticus. The blood pressure was 102 systolic and 58 diastolic and numerous red, slightly cyanotic, raised patchy areas measuring 2 by 2 cm. appeared within four days. There were no small cutaneous petechiae. No retinal hemorrhages were present. Blood cultures were taken every other day until four had been taken.

On the sixth day after the onset of precordial distress the patient had a severe shaking chill followed by a temperature of 102 F. Urinalysis revealed the presence of white blood cells, red blood cells, albumin 3 plus and granular and cellular casts. The abdomen became noticeably distended and necessitated the use of intramuscular pitressin. The pericardial grating was diminishing to the point at which a long, soft blowing systolic murmur became audible over the entire precordium, and P₂ was definitely accentuated. All four blood cultures were now reported positive for growth of *Streptococcus viridans*.

From the Station Hospital.

and it was decided to administer sodium sulfapyridine intravenously. Six Gm. of this drug in 150 cc. of sterile distilled water was carefully, cautiously and extremely slowly administered by vein twice a day in addition to 1 Gm. by mouth every four hours. The general condition of the patient was extremely poor and he was given supportive treatment with whole blood, dextrose and physiologic solution of sodium chloride. The patient received this chemotherapy for four days, the blood pyridine concentration being raised to 16 mg. per hundred cubic centimeters. After this his temperature range was within normal limits except for an occasional slight elevation. He had no further chills. Urinalysis revealed but few red blood cells. Daily ophthalmoscopic examination revealed normal fundi. The spleen was not palpable. Six blood cultures taken from this point on were subsequently reported sterile. The pulse rate continued at a rate of 120 a minute. A short, systolic, apical murmur was audible, and P_2 was considerably decreased in intensity. There were frequent premature ventricular contractions.

In spite of roentgen and physical evidences of the heart and lungs having returned to normal, the electrocardiographic readings were more gradual in their return to normal. Ten weeks after the initial onset of the disease all laboratory and physical examinations except the blood sedimentation rate had returned to normal. The sedimentation rate was still 26 mm. in the first half hour. This reverted to 4 mm. in the eleventh week and remained so on three subsequent examinations. The patient has gained 50 pounds (22.7 Kg.) and has no further complaints, complications or sequelae. There was no pronounced anemia such as that produced frequently in these cases by the powerful streptococcic hemolysins.

SUMMARY

This case shows how decisive must be the action of the chemotherapeutic agent sulfapyridine on *Streptococcus viridans* in the blood stream. Four positive blood cultures prove conclusively that the blood stream was infected and then, after the blood sulfapyridine concentration was raised to and maintained at 16 mg. per hundred cubic centimeters for four consecutive days, the subsequent blood cultures remained sterile.

For several days in the early stages of this illness there was every reason to believe that we were dealing with endocarditis as well as pericarditis as a complication in this case.

The case illustrates forcefully how critically and how desperately ill a patient with this type of condition can be and yet make a 100 per cent recovery, as revealed by the fact that examination six months after the onset of illness reveals no abnormal physical or laboratory findings.

CEREBRAL DAMAGE FROM INSULIN "SHOCK"

HEMIPLEGIA, APHASIA AND EPILEPTIC SEIZURES
FOR FIFTEEN MONTHSFRANK N. ALLAN, M.D., BOSTON, AND R. M. CROMMELIN, M.D.,
PORTLAND, ORE.

Symptoms occurring from overaction of insulin in the treatment of diabetes usually disappear so quickly and so completely that they are now regarded with little concern. Even coma and convulsions no longer cause alarm. In fact, the production of convulsions in insulin therapy of mental disease is undertaken deliberately in the hope of securing beneficial effects. Yet it should not be forgotten that hypoglycemia may cause death or permanent disability from damage to the brain.

A number of reports have been published concerning such results in cases of spontaneous hyperinsulinism as well as in mental and diabetic cases in which insulin therapy has been given.¹ At the same time it must be pointed out that evidence

of permanent harm to the central nervous system has been encountered with relative rarity, considering the large number of diabetic patients treated daily with insulin. Textbooks on diabetes cite isolated examples. Joslin and his associates² mentioned suspicion of permanent mental change after a severe insulin reaction in 1 case, but the origin was not certain in view of previous mental instability and alcoholism. Wilder³ described a case which was also included in the previous report by Layne and Baker; a boy had permanent mental deterioration after a severe insulin reaction which caused unconsciousness lasting six weeks.

A case of juvenile diabetes, seen at the Lahey Clinic, illustrates the unfortunate consequences of cerebral damage from insulin "shock." It is also unique in that epileptic symptoms occurred for fifteen months after recovery from hypoglycemia.

REPORT OF CASE

A girl aged 6 years was admitted to a hospital elsewhere on June 24, 1940 for treatment of diabetes which had begun to cause the cardinal symptoms about three weeks before. She quickly improved under treatment with diet and insulin, and on July 4 the parents were informed that she would be ready for discharge the following day. She was then receiving daily 25 units of protamine zinc insulin before breakfast.

When the parents went to the hospital to take the child home they found that she was unconscious and had been having a series of convulsions. A letter from the attending physician stated that a severe insulin reaction had developed with twitching and convulsions but that she aroused enough to take some corn syrup and orange juice. Blood sugar at that time, 9:30 a. m., was 52 mg. per hundred cubic centimeters; at 5:30 p. m. it was 64 mg.; she was given 30 cc. of 50 per cent dextrose, because she still had convulsions with twitching of the right arm and right side of the face. The temperature, which had been normal in the morning, went to 102, the pulse to 110 a minute and the respiratory rate was 8. She appeared to have some rigidity of the neck. The spinal fluid was normal but under considerable pressure. She remained in a stupor for three days. When she aroused, she had hemiplegia of the right side and aphasia.

The child showed gradual improvement but when she was discharged from the hospital in the middle of July she still had weakness affecting the right arm, and she walked with a limp. She gained strength slowly but did not regain the full use of her limbs. She showed complete aphasia until July 19; then she became able to say single words. Convulsive seizures and spasms affecting the right arm and leg and the right side of the face occurred at intervals, varying in degree and intensity. They became more frequent in the autumn, and during the first part of November they occurred daily.

The diabetes was difficult to control. Regular insulin had been substituted for protamine zinc insulin after the accident. As a rule, from 5 to 10 units of insulin was given before each meal. Some of the tests of the urine were sugar free, but it seemed impossible to control the glycosuria continuously. Convulsive seizures occurred on some occasions soon after insulin had been administered. The parents came to think that the seizures were caused by the insulin, and when the attacks came so frequently they stopped the injections in desperation on November 10.

The child rapidly became seriously ill with the usual symptoms of acidosis. She was rushed to the hospital in Boston and on November 12 arrived in severe diabetic coma. The blood sugar was 820 mg. per hundred cubic centimeters; the carbon dioxide combining power of the plasma was approximately 1. Treatment with 230 units of insulin in divided doses supplemented by the usual measures brought about gratifying recovery, and the child was fully conscious the following morning. The diabetes was finally brought under control with 15 units of protamine zinc insulin before breakfast and 5 units of regular insulin before breakfast and supper.

2. Joslin, E. P.; Root, H. F.; White, Priscilla, and Marble, Alexander: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1940.

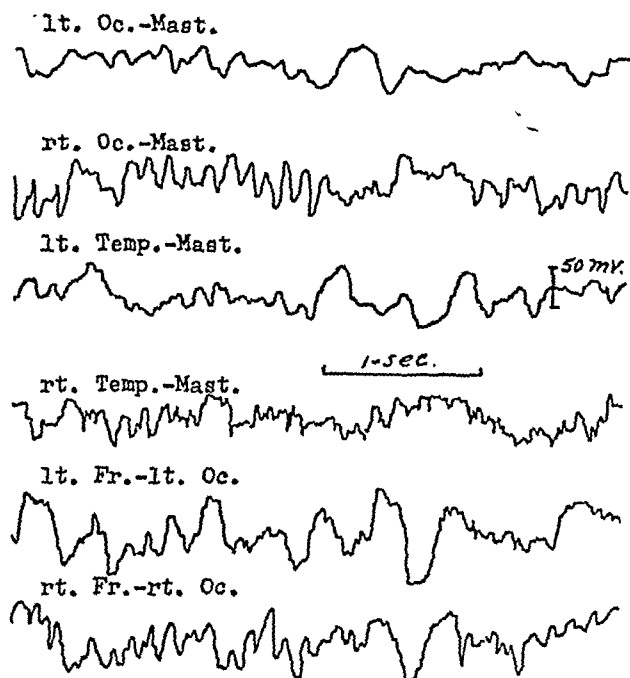
3. Wilder, R. M.: Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia, W. B. Saunders Company, 1940.

From the Department of Internal Medicine, the Lahey Clinic (Dr. Allan); Dr. Crommelin was Fellow in Internal Medicine, the Lahey Clinic.

1. Moersch, F. P., and Kernohan, J. W.: Hypoglycemia; Neurologic and Neuropathologic Studies, Arch. Neurol. & Psychiat. 39: 242-257 (Feb.) 1938. Malamud, Nathan and Grosh, L. C., Jr.: Hyperinsulinism and Cerebral Changes; Report of Case Due to Islet Cell Adenoma of the Pancreas, Arch. Int. Med. 61: 579-599 (April) 1938. Layne, J. A. and Baker, A. B.: Hypoglycemic Cerebral Damage in Diabetic Patients, Minnesota Med. 22: 771-776 (Nov.) 1939. Klein, F., and Lighterink, J. A.: Insulin and Cerebral Damage, Arch. Int. Med. 65: 1085-1096 (June) 1940.

Examination after the coma subsided showed slight weakness and awkwardness in the right arm and slight dragging of the right leg when walking. She continued to show the aphasia. Spasms affecting the right cheek occurred on two occasions. Treatment with phenobarbital $\frac{1}{4}$ grain (0.016 Gm.) three times a day was prescribed to control these attacks. While in the hospital she gained more control of her limbs and further improvement occurred gradually after dismissal from the hospital on November 20. She also made a little improvement in her ability to speak. At the last report, received in October 1941, she was still handicapped by aphasia. Slight epileptic seizures occurred at intervals.

An electroencephalogram made by Dr. Knox H. Finley showed abnormal brain waves, reproduced in the accompanying illustration. There was diffuse abnormal activity which was most pronounced from the left hemisphere, without, however, being limited to any particular part.



Electroencephalogram. Six simultaneous recordings (six channel electrocardiographic apparatus) from the occipital, temporal and frontal leads to occipital areas of each hemisphere. From each three pairs of homologous leads it will be noted that the slow 3 to 4 per second high voltage activity is more pronounced from the left than from the right in each instance, demonstrating a greater degree of disturbance of the cerebral electrical activity from the left hemisphere than from the right. Some runs of normal 9 per second cycles are observed from the right occipital and right frontal to the occipital leads. Not one is observed from leads over the left hemisphere.

COMMENT

One can assume that the occurrence of coma and convulsions under the conditions described must have been due to an insulin reaction, and this opinion was confirmed by the blood sugar reports furnished by the attending physician. The subsequent ill effects can be attributed to organic changes in the brain from the prolonged hypoglycemia. There can be little doubt that this patient has had damage similar to that described in cases in which hypoglycemia has been fatal. The prognosis must be considered serious, but the recovery of function of the arm and leg, together with improvement in speech, is encouraging. Yet the persistence of some degree of mental dulness, partial aphasia and epileptic symptoms for fifteen months limits the hope of complete recovery of cerebral function. The experience with a case such as this indicates the need for caution in the prevention and treatment of severe hypoglycemic reactions when even moderate doses of insulin are employed.

605 Commonwealth Avenue.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

TREATMENT OF YELLOW FEVER

FRED L. SOPER, M.D.

RIO DE JANEIRO

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—Ed.

In the treatment of yellow fever there is only one rule: do not kill the patient.—*Miguel Couto.*

The therapy of yellow fever can be given in a single line: the disease cures itself or kills in spite of any and every treatment.—*Sinval Lins.*

These aphorisms summarize the experience of the Brazilian medical profession in Rio de Janeiro from 1849 to 1908 and in 1928-1929; Couto, for many years the revered dean of the national profession, practiced in Brazil's capital during the last two decades of yellow fever endemicity and was still active during the 1928-1929 epidemic, and Lins was in charge of the hundreds of patients isolated in the São Sebastião Hospital during this epidemic. Observations on experimental infections in the rhesus monkey since 1927 have confirmed this extreme therapeutic pessimism. A consideration of the etiology, pathology and symptomatology of yellow fever aids in understanding the difficulties of attempting specific therapy. Fortunately the situation with respect to prophylaxis is much more favorable.

DEFINITION

Yellow fever is a short, self-limited infection caused by a specific virus, followed by an intoxication due in large part to the destruction of tissue cells, especially the parenchymal cells of the liver.

ETIOLOGY

Man may acquire yellow fever in nature as a link in the man-Aedes aegypti-man chain of the urban disease or as an offshoot of the vertebrate-invertebrate-vertebrate jungle cycle of infection. Clinically, pathologically and immunologically the disease is identical whatever the source of infection, domiciliary or forest.

The specific virus of yellow fever is one of the smaller pathogenic filtrable viruses. Active yellow fever virus is highly antigenic in man and monkeys and is very susceptible to the antibodies produced. Although differences in behavior in test animals can be demonstrated for viruses just isolated from patients with yellow fever and for others modified in various ways in the laboratory, these differences are not sufficient to permit immunologic differentiation.

The term "pantropic" is applied to yellow fever virus as isolated from patients with this disease since it possesses both viscerotropism and neurotropism. Pantropic virus produces visceral yellow fever in rhesus monkeys, whether inoculated subcutaneously or intracerebrally, but produces, following intracerebral inoculation, encephalitis in the white mouse which is not susceptible to visceral yellow fever. The viscerotropism of the pantropic virus can be readily reduced by repeated brain to brain transfer in the mouse, but such repeated transfer augments the neurotropism, as shown by the short-

ened incubation period between inoculation and the onset of encephalitis. The neurotropic virus thus obtained no longer produces visceral yellow fever in rhesus monkeys, but intracerebral inoculation is followed by fatal encephalitis. The simultaneous reduction of both viscerotropism and neurotropism has been accomplished (vaccine virus 17D) but is much more difficult and uncertain. The reduction in viscerotropism is apparently much greater than that of neurotropism; the modified virus kills the white mouse with encephalitis, but only after a prolonged period of incubation, and produces encephalitic symptoms in a certain percentage of rhesus monkeys.

The virus of yellow fever has been shown to exist in the blood stream, in quantities sufficient to infect mosquitoes, only from the first to the end of the third day, although the more sensitive mouse inoculation test has shown some virus in human cases as early as four hours before and as late as the beginning of the fifth day after onset. The disappearance of virus from the blood stream is correlated with the development of antibody which may be present in amounts sufficient to protect white mice by the end of the fourth day. Virus and antibody have been shown to coexist on the fourth day, and positive results from the mouse protection test have been reported for cases which later progressed to a fatal termination. The high concentration of active virus in the blood stream corresponds to the initial period with symptoms of infection, whereas virus is either absent or present in minimal quantities during the period of intoxication. The inoculation of even large amounts of inactivated virus is not followed by the production of antibody nor by signs of intoxication. The symptoms of the intoxication phase of yellow fever cannot, then, be attributed to inactivated virus.

MORBID ANATOMY

Internally, the gross autopsy generally reveals jaundice, hemorrhage, a pale yellow, fatty liver, a pale, flabby heart and tense, swollen kidneys. Greater or lesser evidence of hemorrhage may be found in the stomach, intestine, gallbladder, epicardium and pericardium, meninges, uterus, pleura, lungs and bladder.

The most important microscopic lesions of yellow fever consist of degenerative changes, fatty degeneration and necrosis of the parenchyma, with almost no inflammatory reaction. Many organs and tissues are affected by these changes, but those of the liver, kidney and heart are most important.

Liver.—The extent of injury to the liver revealed by microscopic examination is surprising in the face of its relatively normal gross appearance. The lesion is complex, involving the parenchymatous cells in necrobiosis, necrosis and fatty degeneration. The degree of necrotic change may range from 5 to 95 per cent of the parenchymal cells. In extreme cases only a few cells, recognizable as hepatic parenchyma, may be found close to the portal sheath at the periphery of the lobule and a few others forming a rim of scattered cells about the central vein.

Fatty changes are always found in the liver of patients with yellow fever, but the extent of involvement varies widely from patient to patient. There is no evidence of damage to the stroma.

Kidney.—The reaction of the kidney to yellow fever is like that of the liver: degenerative, not inflammatory. The lesion varies greatly from cloudy swelling to severe

fatty degeneration and necrosis and is not necessarily correlated with the alterations of the renal function observed. The convoluted tubules of the cortex are especially subject to damage, but the medullary tubes may also suffer. The glomeruli may show congestion and some exfoliation of surface epithelium.

Heart.—Well defined degenerative noninflammatory changes may be found in all parts of the myocardium, including the sinuatrial node, the auricle, the auriculo-ventricular bundle and the ventricle. Granular and fatty degenerations of the muscular fibers are constantly found, hyaline and vacuolar degenerations less frequently. The degenerative lesions of the myocardium are sufficient to explain the functional disturbances encountered in yellow fever, such as bradycardia, lowered arterial pressure, severe asthenia, venous stasis and electrocardiographic irregularities.

The lesions are not equally severe in all organs of the same patient; when the liver is badly damaged the heart may escape lightly, or vice versa, while in other instances the kidneys seem to bear the brunt of the attack. There is, however, in all cases resulting in death an appreciable necrosis of liver tissue, and this is the most constant as well as the most characteristic lesion of yellow fever.

BLOOD CHEMISTRY AND METABOLISM OF YELLOW FEVER

Studies on the rhesus monkey infected with yellow fever show that the chemical components of the blood serum and the metabolic functions of this animal suffer little change during the first stage but shortly before death undergo important modifications of a character often found correlated with extensive destruction of liver tissue.

Early changes, which may appear some days before death in rhesus monkeys, include:

1. Increased bilirubin content of the blood.
2. Diminished rate of excretion of bromsulphalein dye.
3. Lowered fibrinogen content of blood, associated with increased clotting time.

Later changes, generally apparent only on the last day before death, include:

4. Progressive hypoglycemia, at first slight, preceding alteration in nitrogenous elements and becoming severe in later stages.
5. High concentration of nonprotein nitrogen in the blood.
6. Absolute increase in urea concentration, proportionately less than the increase of nonprotein nitrogen.
7. Increase of amino acid nitrogen, proportionately greater than the increase of nonprotein nitrogen.
8. Increase of rest nitrogen.

Creatinine increases but little, and that only immediately before death, probably as the result of a terminal anuria, while uric acid does not increase at all and the percentage of the total nonprotein nitrogen of these two constituents is greatly reduced. Attention should be called to the occurrence of extreme hypoglycemia without hyperuricemia. Hypoglycemia is a common finding in human infections of yellow fever.

Only if yellow fever has produced obvious symptoms of intoxication do the concentrations of the nitrogenous constituents of the blood become appreciably altered. The most significant change is that in the amino acid nitrogen, which shows strikingly large gains both in absolute amount and in relation to total nitrogen. The changes noted indicate a loss of ability to deaminate amino acids and to form urea, a deficiency of uric acid

production and an impairment of hepatic glycogen formation, all of which are found following hepatectomy. It is difficult to escape the conclusion that they are dependent on a destruction of the liver parenchyma. Although the kidneys are functionally damaged, the retention by the rhesus kidney of the ability to produce urine in normal amounts and of normal concentration throughout the preintoxication stage of yellow fever indicates that this damage is not the chief factor in the production of the most characteristic disturbances of the disease. No definite evidence of serious impairment of kidney function was observed except terminal anuria.

A significant increase of guanidine in the blood has been found in monkeys, and a similar finding has been reported in a human case. A similar increase of guanidine in the blood has been found in other diseases and intoxications in which extensive damage to the liver occurs, such as carbon tetrachloride, phosphorus, arsphenamine, chromium and chloroform poisoning, acute yellow atrophy, Laënnec's cirrhosis of the liver and eclampsia. Guanidine poisoning in dogs produces bloody vomit, hypoglycemia, depression, prostration and death, with autopsy showing hemorrhagic areas at the pyloric end of the stomach and in the duodenum. The similarity of this picture to that of yellow fever is pronounced.

CLINICAL PICTURE

The clinical picture of yellow fever may vary as much as do those of measles, smallpox, poliomyelitis and other virus diseases. Yellow fever may be seen as:

1. Inapparent infection recognized only through proof of acquired immunity.
2. Abortive infection with vague initial symptoms suggestive of mild influenza, lasting only some hours or possibly one day, often recognized only by slowing of the pulse during convalescence.
3. Incomplete attacks with severe onset, high fever, headache, body pains, dizziness and temperature and pulse curves typical of yellow fever but without hemorrhage, jaundice and anuria. Albuminuria and cylindruria may appear suddenly and increase rapidly on the third, fourth or even fifth day in the absence of other severe symptoms.
4. Complete attacks, classic yellow fever. In these cases, following a typical severe onset with symptoms of severe infection, there occur during the second stage albuminuria, hemorrhage and jaundice. The classic attack may be mild if the hemorrhage does not become excessive and the kidneys do not continue to secrete. Severe oliguria and anuria are found only in cases presenting hemorrhage and jaundice.

The clinician notes in the early phase of classic yellow fever the usual signs and symptoms of acute infection but finds nothing to prepare him for the overwhelming intoxication which supervenes as the infection itself declines. The classic clinical picture of yellow fever is one of intoxication rather than of infection and consists of a symptom complex associated with the loss of hepatic and renal function, which is common to a number of diseases and intoxications producing destruction of liver parenchyma. This complex is not pathognomonic of yellow fever; it is the sequence of symptoms, rather, that is the most characteristic feature of the disease.

Period of Infection.—The onset of yellow fever is dramatic in the rapidity with which, within a period of a few hours, an apparently well person is transformed into a very sick patient. The symptoms—headache, backache, pain in the legs, malaise, nausea and vomiting—are out of all proportion to the physical examination.

In many cases the infection of yellow fever is explosive, the pulse and temperature reach their fastigia on the first day, after which there is a tendency for both to decline, the pulse falling sooner, more rapidly and more constantly than does the temperature. This behavior of the pulse and temperature is probably the most constant and characteristic individual finding in yellow fever. Although the temperature often shows a secondary rise during the phase of intoxication, the pulse seldom does, in uncomplicated cases, except in extremis. Bradycardia is common after the third day.

The general picture presented by the patient during the period of infection is one of active congestion accompanied by severe prostration. Nausea and vomiting, associated with this period, are not necessarily indicative of a serious prognosis, and the early appearance of a relatively heavy albuminuria is of diagnostic rather than of prognostic importance.

Generally at the end of the first forty-eight to seventy-two hours the congestion declines, the temperature reaches normal or even subnormal levels and the patient enters a period of relative tranquillity which marks the end of the period of infection.

Period of Intoxication.—About the end of the third day, but sometimes as late as the fifth, the entire clinical picture changes. The active congestion of the previous period is replaced by a venous congestion, accompanied by low arterial tension; nausea and vomiting, which may have been present during the period of infection, are now more severe and are of grave import. Overwhelming intoxication becomes apparent with the appearance of the formidable triad albuminuria, hemorrhage and jaundice. In fulminant attacks symptoms of intoxication are precocious and merge with those of the phase of the infection.

Jaundice.—The jaundice of yellow fever may be so slight as to be missed by the inexperienced, and is rarely or never intense in early cases. Subicterus is the most common finding and may be noted in the conjunctivas as early as the end of the second day, but severe, visible cutaneous icterus appears late and is not found in the fulminant type of the disease, in which symptoms of intoxication appear before those of infection have abated.

Hemorrhage.—The amount of hemorrhage noted in cases of yellow fever varies greatly, but some tendency to hemorrhage is to be found in the majority of clinically diagnosable cases. Although slight hemorrhage may, and often does, occur during the initial stage of active congestion, the dangerous, typical hemorrhage of yellow fever is that of the second phase. Serious hemorrhage generally develops somewhat later than does albuminuria, although in fulminant attacks second phase hemorrhage may begin as early as the end of the second day. Hemorrhage may be so severe as practically to exsanguinate the patient and is undoubtedly often the immediate cause of death.

Albuminuria.—The onset of albuminuria is rapid, as if some sudden, violent intoxication involving renal function had occurred rather early in the course of the infection. From a normal urine, or one showing only the traces of albumin usually found in cases of febrile involvement, a sudden jump to 3 or 4 Gm. of albumin per liter, with hyaline and granular casts, may occur in eight or ten hours, as early as the end of the second day or as late as the fourth or even the fifth day of illness. Albuminuria is almost a constant finding in cases of yellow fever, and even cases of mild involvement will usually show some albumin if carefully studied.

throughout. Practically all cases of severe yellow fever show a much heavier albuminuria than would be expected in severe fevers due to other causes. Heavy albuminuria may be found in cases showing no other severe symptoms and is not in and of itself of serious prognosis.

Anuria, the most dreaded symptom of yellow fever, may occur unexpectedly in cases presenting an otherwise favorable prognosis. Anuria apparently depends on an entirely different mechanism from that producing precocious albuminuria. The former is never found without other signs of destruction of the liver, whereas the latter may be heavy in cases of mild disease without such signs. Anuria follows and seems to depend on hepatic involvement; albuminuria may precede and even be independent of other signs of hepatic intoxication. It is probably safe to conclude that albuminuria may occur either as a result of direct involvement of renal function during the phase of infection or later because of intoxication secondary to destruction of hepatic parenchyma but that anuria is produced only by this secondary intoxication.

TREATMENT

Virus diseases are, in general, noteworthy for their variability in severity. Yellow fever is a prominent example of such variability and is also a disease of uncertain prognosis. Only with a knowledge of these characteristics is it possible to understand the past acceptance and popularity of many forms of treatment for yellow fever, since abandoned. Once yellow fever has declared itself, there are no known specific serologic or chemical therapeutic agents of value.

Serum Treatment.—The demonstration of successful immune serum therapy in other infectious diseases led to the hope that it might be useful in yellow fever, which constantly produces a high grade and permanent immunity in man. Although the inoculation of small amounts of immune serum just before, together with or within a few hours after the inoculation of yellow fever virus in rhesus monkeys has been found efficient in preventing the multiplication of virus and the development of infection, the use of relatively large amounts of such serum soon after onset of symptoms in either man or monkey has not appreciably altered the course of the disease. A possible explanation of these observations is to be found in the behavior of the virus and immune serum in tissue culture. Simultaneous inoculation of immune serum with the virus in tissue culture prevents growth of the virus, whereas addition of immune serum to tissue culture in which the virus is already developing results in sterilizing the liquid part of the culture but fails to inactivate or prevent the development of the virus already within the cellular elements of the culture.

Apparently the onset of symptoms in yellow fever occurs only after the virus has been widely distributed and safely entrenched within the cells throughout the body.

Prophylaxis.—Immune serum was extensively used for the protection of laboratory workers exposed to yellow fever virus previous to the development of vaccination with modified strains. Experience shows that such passive immunization is fleeting and uncertain and should not be relied on for more than a few days following inoculation.

Active modified strains of yellow fever virus have been used for immunization since 1931. The first of these used, having a reduced viscerotropism but

increased neurotropism, was considered unsafe by American workers unless combined with immune serum. This requirement greatly limited its application. In the Americas, in England and in the British colonies in Africa, vaccination has since 1937 depended on the use of another strain, known as 17 D, which has not only lost in great part its viscerotropic affinity for liver and kidney tissue but also, in contrast with the strain previously used, shows a greatly reduced neurotropism.

Virus 17 D grows readily in chick embryo, and the infected embryo itself is used in the preparation of the vaccine. Only one inoculation is given. Successful vaccination depends on delivering living virus under the skin of the person being vaccinated. Inactivated virus is not antigenic, and every precaution should be taken to protect vaccine virus against moisture, heat, sunlight and other harmful agents.

Reactions to virus 17 D are generally unnoted or consist only of slight headache and malaise for some hours five to eight days after inoculation.

In most cases in which tests have been made the active immunity produced by virus 17 D has persisted unaltered during the four year period since the field use of this vaccine began. Only after the lapse of a longer period can conclusions regarding its duration be drawn.

Symptomatic Treatment.—Although there is no specific treatment of yellow fever, there are certain clear indications for careful handling of all cases, even apparently those of mild involvement.

To meet the involvement of the circulatory system which occurs early, is often severe and may persist far into convalescence, the patient should have from the beginning absolute bed rest in a recumbent position. The patient should not be moved from the place of attack, especially after the first day. The reassumption of activity during convalescence should be very gradual. Careful nursing is essential.

The gastrointestinal tract should be relieved of its routine responsibilities. An initial saline purge may be given on the first day, followed by daily enemas. Abstinence from food, except fruit juices to combat hypoglycemia, should be absolute during the phase of infection and, until after the temperature has returned to normal, in the phase of intoxication. Water, Vichy water or water alkalinized with sodium bicarbonate, and citrus fruit juices may be given frequently in small amounts. If vomiting prevents taking liquids by mouth, recourse may be had to intravenous dextrose, physiologic solution of sodium chloride by hypodermoclysis and tap water by rectum. For direct relief of vomiting, cracked ice and cocaine hydrochloride 0.015 Gm. ($\frac{1}{4}$ grain) U. S. P. may be given by mouth and codeine sulfate 0.03 Gm. ($\frac{1}{2}$ grain) U. S. P. by hypodermic injection. Feeding should be resumed slowly, beginning with chicken broth, buttermilk, rice water, crumbled egg yolk and easily digestible liquids with added lactose.

A high temperature may be relieved by an ice cap to the head and by tepid sponge baths. Depressant antipyretic drugs should not be used.¹

The results of chemical analysis of the blood would seem to indicate the use of dextrose to combat hypoglycemia and of calcium salts to neutralize the guanidine-like toxins common in conditions causing

1. Quinine should be administered to patients with fever in regions in which yellow fever may be present only after confirmation of the diagnosis of malaria by examination of the blood film.

destruction of liver parenchyma. The use of calcium lactate and dextrose, so successful in some other intoxications, has not been followed by recovery of monkeys showing signs of intoxication, nor have striking results in man been demonstrated.

Further studies of the effect of these substances would seem to be indicated. The rhesus monkey may not be suitable for such studies, since it is more susceptible to the substances producing intoxication in yellow fever than is man. It is to be hoped that few opportunities will occur for future observation of therapeutic measures in yellow fever in man. The possibility of completely eradicating *Aedes (Stegomyia) aegypti* from towns, cities and even entire states makes future urban outbreaks unnecessary, and vaccination is available for the protection of populations exposed to jungle yellow fever. The proper application of these prophylactic measures should prevent the occurrence of outbreaks to supply the necessary cases for observation.

To close these remarks on the treatment of yellow fever on the same pessimistic note on which they opened, it is fitting to quote from Lins again:

. . . alkalis and acids, glucose and insulin, serum and blood of convalescent cases, transfusion of normal blood,, anti-yellow fever serum, specific vaccine therapy, bleeding, injections of lugol [compound solution of iodine], of permanganate, of hyposulfite of sodium, of calcium, of chlorides, colloids, bismuth preparations, hemostatics of all kinds, and finally antitryptic serum in large doses, all were tried in vain against this terrible disease. Never did I observe beneficial effects from any of these remedies; in not a single case did I have the satisfaction of believing that my treatment had improved the condition of this patient or that one, much less that it had been responsible for saving the life of this or that individual. The moribund whom I saw resuscitated were saved by a miracle and owe nothing to me; likewise, I owe nothing to the athletic young men I saw die except the lingering remorse of having done nothing to save them. . . . I tried innumerable times; but, accomplishing nothing, concluded at last that it was better to fold my arms rather than to contribute to the precipitation of the fatal outcome.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT AND REPORT. AUSTIN E. SMITH, M.D., Acting Secretary.

PRONUNCIATION OF THE WORDS AMIDE, SULFANILAMIDE AND SULFATHIAZOLE

The Council's Committee on Nomenclature has given consideration to the pronunciation of the words amide, sulfanilamide and sulfathiazole.

In harmony with the article "The Pronunciation of Chemical Words—A Report of the Nomenclature, Spelling and Pronunciation Committee of the American Chemical Society" (*Indust. & Engin. Chem., News Ed.*, May 20, 1934, p. 202) the committee recommended that the word amide be pronounced with a long "i" (amide), this being preferable both because of the final e and the analogy with chloride and iodide. For the same reason the committee held that the preferred pronunciation of sulfanilamide should be sulfanilamide with the major accent on the antepenultimate syllable, *il'*.

In agreement with the principle that English accentuation is recessive, it is believed that the preferred accent would be on the syllable *thi* in sulfathiazole.

The Council adopted the foregoing pronunciations.

NASAL INHALANT PREPARATIONS CONTAINING PETROLATUM OMITTED FROM N. N. R.

For several years dosage forms of several vasoconstrictor and other drugs, marketed as inhalants in oily or ointment vehicles consisting wholly or in part of petrolatum (principally liquid petrolatum), have been included in New and Nonofficial Remedies. The previously accepted products of this type contained one of the following in amounts of 1 per cent or less: amphetamine (benzedrine), ephedrine, epinephrine (adrenalin, suprarenalin), neosynephrin hydrochloride and chlorobutanol (chloretone). The vasoconstrictor preparations were recognized for intranasal application to induce shrinkage of the mucous membrane for the relief of nasal congestion accompanying rhinitis (infectious or catarrhal and vasomotor or allergic) and sinusitis.

In a recent report by Cannon¹ published under the auspices of the Council, evidence was advanced to indicate that the promiscuous use of oily nose drops, particularly those containing liquid petrolatum, was dangerous from the standpoint of lipid pneumonia and that the therapeutic rationale of oily intranasal medication deserves reexamination because of evidence to indicate that oil interferes with the normal function of the ciliated epithelium of the upper respiratory tract. The Council has accordingly recently reconsidered the status of previously accepted oily inhalant preparations with the view to determining which types of such products justified continued inclusion in N. N. R.

In its study of oily inhalants the Council has sought the advice of several leading rhinologists. It was the consensus of these authorities that the evidence for the danger of lipid pneumonia from the repeated use of inhalants containing petrolatum warrants the omission of such preparations from New and Nonofficial Remedies, that all oily inhalants are capable of interfering with ciliary action and that isotonic aqueous vehicles are preferable from this point of view. Opinions were not conclusive with regard to the danger of lipid pneumonia following the use of inhalants containing oils other than petrolatum. In view of this and the possibility that the more prolonged contact of drugs with the nasal mucous membrane afforded by viscous vehicles might in some cases outweigh the detrimental influence of oils on ciliary activity, the Council decided that it was advisable to take action to omit from New and Nonofficial Remedies only petrolatum-containing inhalants. It was emphasized that petrolatum-containing preparations have been indisputably implicated in the production of lipid pneumonia, whereas the evidence against inhalants having vehicles containing vegetable oils (either in liquid, ointment or jelly form) as causes of lung irritation remains to be established by further investigation. It was pointed out however that, while there is no evidence that oils produce permanent damage to the nasal mucous membrane, the interference with ciliary function by viscous substances makes it generally preferable to employ local vasoconstrictors in aqueous vehicles which have been rendered isotonic. Meanwhile the Council will retain in N. N. R. only those oily inhalants which do not contain petrolatum, pending the development of more positive evidence concerning the irritative properties of other types of oils. The need for further study of other oils from the standpoint of lipid pneumonia was indicated in a previous report of the Council.²

The Council voted to omit all brands of inhalant nasal preparations containing petrolatum from New and Nonofficial Remedies because of the danger of lipid pneumonia from the repeated intranasal use of such products and the fact that other, safer vehicles for inhalant preparations are available.

1. Cannon, P. R.: The Problem of Lipid Pneumonia, *J. A. M. A.* **115**: 2176 (Dec. 21) 1940.

2. Halogenated Vegetable Oils for Bronchography and the Problem of Lipid Pneumonia, *J. A. M. A.* **117**: 2253 (Dec. 27) 1941.

Committee on American Health Resorts

THE AMERICAN MEDICAL ASSOCIATION COMMITTEE ON AMERICAN HEALTH RESORTS¹ HAS AUTHORIZED THE PUBLICATION OF THE FOLLOWING RULES FOR THE LISTING OF AMERICAN HEALTH RESORTS. THESE RULES HAVE BEEN ADOPTED BY THE COMMITTEE AND APPROVED BY THE BOARD OF TRUSTEES OF THE AMERICAN MEDICAL ASSOCIATION. THE EXPLANATORY MATTER ACCOMPANYING THE RULES HAS ALSO BEEN APPROVED BY THE COMMITTEE.

W. W. BAUER, M.D.

Recognizing the value of those phases of medical treatment included under the general classification of health resort or spa treatment such as climate, thermal and mineral waters, sea water and peloids (muds), the House of Delegates of the American Medical Association in 1938 authorized the appointment of a Committee on American Health Resorts. This committee was accordingly appointed by the Trustees.

The committee first prepared a questionnaire which could be sent to known health resorts asking for information as to their natural therapeutic resources, domiciliary and recreational facilities and, more important, the medical facilities available and the medical supervision of the use of therapeutic facilities available.

A list of health resorts was then compiled from various sources including books, government publications, the records of the American Congress on Physical Therapy, tourist guides and miscellaneous sources.

Through an extensive survey by questionnaire and correspondence a comprehensive list was developed of health resorts in the United States including those with and without medical facilities.

The committee next proceeded to establish and define certain minimum fundamental standards which would assure the safe and successful use of natural therapeutic resources according to established scientific procedure. These standards have been expressed in the rules published herewith. These rules are subject to modification as experience indicates.

The committee now plans to offer an opportunity to American health resorts to apply for a listing which the committee proposes to compile. This listing will include health resorts which comply with the rules of the committee. Application blanks will be furnished on request addressed to the Committee on American Health Resorts, American Medical Association, 535 North Dearborn Street, Chicago.

On receipt of an application² properly filled out the committee will, with all possible promptness, cause inspection to be made of the applicant's premises and will make such other investigations as the committee may deem advisable. A report will be compiled, submitted to the applicant and published. If the applicant is found to comply with all the rules of the committee, the name of the health resort will be included in the committee's list during such time as compliance with the rules of the committee continues.

When any modifications of the rules are deemed necessary, those resorts already listed under rules as previously adopted will be notified promptly and will be given reasonable opportunity to comply with the modified ruling or voluntarily to withdraw from the listing.

RULES

Object of Rules.—The following rules with such amendments as may be added from time to time have been adopted by the

1. Following are the members of the committee: Walter S. McClellan, M.D., acting chairman, Saratoga Springs, N. Y.; William P. Holbrook, M.D., Tucson, Ariz.; Miletus B. Jarman, M.D., Hot Springs, Va.; Frank H. Krusen, M.D., Rochester, Minn.; Euclid M. Smith, M.D., Hot Springs, Ark.

Committee on American Health Resorts of the American Medical Association with the primary object of identifying for the medical profession and the public those health resorts which are shown by investigation of their location, climate, personnel and management to merit recognition by the medical profession.

Definition.—A health resort is defined as "an institution which gives major attention to the use of the special climatic and other natural therapeutic resources including mineral waters, peloids, etc., with which it is endowed by reason of its location." While the use of the natural resources is the prime object or purpose of the institution, other remedies may be applied as an adjunct.

List.—American Health Resorts which are found by the committee to conform to the letter and spirit of the following rules will, on application approved by the committee, be placed on a list to be published by the committee:

RULE 1.—Application.—To be considered for inclusion in the committee's list, formal application must be made to the committee according to the following formula:

(a) Formal application for consideration written on stationery of the applying health resort, addressed to the Secretary of the Committee on American Health Resorts, American Medical Association, 535 North Dearborn Street, Chicago.

(b) This application should be accompanied by complete information on: (1) ownership, (2) personnel, (3) equipment, (4) method of operation, (5) method of promotion.

(c) Eight copies each of all recent advertising, descriptive booklets, pamphlets, circulars, promotional form letters and any other promotional matter pertaining to the health value of the resort should be submitted.

(d) All correspondence with the secretary should be in duplicate.

RULE 2.—Claims and Advertising.—The claims made for a resort must be acceptable to the committee, and all advertising material must be presented with applications. A resort will not be listed or retained if the management makes unwarranted, exaggerated or misleading statements in any of its advertising.

RULE 3.—Medical Supervision.—Medical supervision must meet with the approval of the committee and must be of such character as to place proper safeguards about the patient to protect him from mistreatment or dangerous treatment. Institutions which permit attendants or technicians to alter or supplement a physician's prescription or to prescribe treatment without restrictions or medical supervision will not be listed. An institution applying for listing will be scrutinized most carefully as to the character of the safeguards placed about the patient by way of medical supervision and the efficiency and good faith with which the rules governing these needs are enforced.

RULE 4.—Inspection.—An institution which makes application cannot be given formal consideration until it has been inspected by an inspector designated for the purpose by the committee.

RULE 5.—Removal from List.—If in the opinion of the committee a listed institution fails to live up to the letter and spirit of these rules or engages in practices contrary to established scientific procedure, the committee may remove the institution from the list.

RULE 6.—Committee Decision Final.—In making application for inclusion in the committee's list, the applicant agrees that final decision as to listing, nonlisting or subsequent removal shall rest with the committee.

2. Application blanks will be furnished free on request addressed to the Committee on American Health Resorts, American Medical Association, 535 North Dearborn Street, Chicago. The request should be on the letterhead of the institution.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 31, 1942

NEWER KNOWLEDGE OF DIPHTHERIA GRAVIS

Studies of production of toxin by malignant strains of *Corynebacterium diphtheriae* recently reported by O'Meara¹ of Trinity College, Dublin, and by Mueller² of Harvard University have led to a new and clinically plausible theory of the etiology of diphtheria gravis. The optimism that prevailed during the first three decades of the twentieth century with regard to the successful therapeutic control of diphtheria yielded to pessimism and perplexity with the appearance in 1927 of numerous cases of malignant diphtheria in central Europe. Such cases were wholly refractory to routine methods of serum therapy. In certain Berlin hospitals, for example, the diphtheria mortality rose from the previous statistical level of 5 per cent to approximately 30 per cent. Similar high mortalities were afterward reported from France, Czechoslovakia, Italy and Rumania, with a later spread of the epidemic to the British Isles.³

The malignant cases of diphtheria were characterized by evidence of hypertoxicity, severe local edema and necrosis with relatively slight membrane formation in the throat, massive cellulitis ("bullneck") and degenerative lesions in the kidneys, heart muscle, adrenals and nervous tissues, with an occasional focal necrosis in the spleen. Twenty times the usual therapeutic dose of diphtheria antitoxin was injected intravenously in a number of instances without curative effects. By the application of routine cultural methods, morphologically and culturally typical diphtheria bacilli were isolated in the malignant cases. Demonstrable differences in toxin production from standard laboratory strains were not apparent. The usual commercial antitoxin protected laboratory animals equally well against the new toxins. Special antisera prepared by immunizing animals against the new toxins were not found superior to the commercial product.

With the introduction of tellurite chocolate agar as a differential culture medium, however, evidence developed that clinicians were dealing with a hitherto unrecognized type of diphtheria bacillus, easily recognized by its colony morphology. For this strain Anderson⁴ then suggested the name *Corynebacterium diphtheriae gravis* with *Corynebacterium diphtheriae mitis* suggested for the classic relatively nonmalignant strain. The American standard toxin producer (Park No. 8) was found to be half way between the mitis and gravis type and was therefore classified as *Corynebacterium diphtheriae intermedius*. Study of 1,300 cases during the 1936 Ukrainian epidemic showed that this classification has clinical significance. The Zinnemanns,⁵ for example, found that 96 per cent of all cultures isolated during life for all fatal cases during this epidemic were of the gravis type. Most of the nonfatal cases were due to mitis infection.

The first definite explanation of the evident hypertoxicity of gravis strains resulted from altering the routine technic of toxin production in vitro. In the routine method the bacilli are grown for relatively long periods in a liquid medium so as to favor oxidation and enzymic destruction of initial toxic products. To imitate the natural method of growth in the throat, O'Meara cultivated gravis strains for a shorter time (forty-eight hours) on Loeffler's blood serum and extracted the massive growths thus obtained in saline solution. The resulting extracts freed from organisms by centrifugation and Berkefeld filtration were found to be almost free from classic diphtheria toxin, rarely containing more than 0.2 minimum lethal dose per cubic centimeter as determined by animal tests. Injected intracutaneously, however, the gravis extracts produced necrotizing and edematous lesions resembling the local reactions to potent staphylococcus or streptococcus toxins. This dermal toxin was not demonstrated in control extracts from mitis or intermedius strains. From such evidence O'Meara concluded that the main or initial product from gravis strains is an endotoxin analogous to the Duran-Reynolds "spreading factor" formed by certain invasive strains of pyogenic cocci.

If this gravis "spreading factor" is mixed with routine diphtheria toxin and injected subcutaneously in the central part of the guinea pig abdomen, the mixture often produces an enormous edematous lesion extending from the neck to the pubis with subsequent massive necrosis, a phenomenon simulating the massive cellulitis of gravis cases. In such injections the time of death is determined by the routine diphtheria toxin in the mixture and is not related to the amount of gravis factor. From such evidence O'Meara concludes that malignant diphtheria is due to the synergic effects of classic diphtheria toxin with gravis endotoxin. Routine anti-

4. Anderson, J. S.; Haggold, F. C.; McLeod, J. W., and Thomson, J. G.: *J. Path. & Bact.* 34: 667 (Sept.) 1931.
5. Zinnemann, K., and Zinnemann, I.: *J. Path. & Bact.* 49: 155 (Jan.) 1939.

1. O'Meara, R. A. Q.: *J. Path. & Bact.* 51: 317 (Nov.) 1940.
2. Mueller, J. H.: *J. Immunol.* 42: 343-353 (Nov.) 1941.
3. McLeod, J. W.; Orr, J. W., and Woodcock, Hester E. de C.: *J. Path. & Bact.* 45: 99 (Jan.) 1939.

diphtheritic serum plus an effective antiendotoxin would presumably be necessary for effective serum therapy.

A second equally significant characteristic of gravis strains is their resistance to certain local immunity mechanisms in the throat. Locke and Main,⁶ for example, showed that the production of toxin by classic strains of the diphtheria bacillus is inhibited by slight traces of iron salts added to the culture medium. Pappenheimer and Johnson⁷ found that good toxin was obtained only between extremely narrow limits of inorganic iron, the optimum being well below that often present as an unrecognized impurity in culture materials. The best yield was obtained at a concentration of 0.14 microgram of iron per cubic centimeter. Smaller amounts of iron resulted in poor growth and reduced amounts of toxin. Larger amounts, while consistent with excellent growth, allowed progressively less toxin to be formed, 0.5 microgram per cubic centimeter practically stopping toxin production. Mueller,⁸ who confirmed this work, found that Park No. 8 would produce only about 3 minimum lethal doses of toxin per cubic centimeter at an iron concentration of 4 micrograms, 800 minimum lethal doses per cubic centimeter being produced at the optimum iron concentration (0.14 microgram). Analyses of diphtheria membranes suggest that 4 micrograms per cubic centimeter is approximately the iron concentration in the throat. Less than 0.5 per cent of maximum toxin yield is therefore presumably produced by Park No. 8 under the inhibiting influence of the simpler iron compounds (including hematin) of the pharyngeal mucosa.

A parallel study of typical gravis strains isolated from the recent Halifax epidemic showed a similar inhibiting effect. Gravis strains, however, are more resistant to this inhibition, being able to produce nearly 40 per cent of their maximum yield in spite of this pharyngeal inhibition. This is approximately thirteen times the amount of toxin that can be produced by mitis or intermedius strains under similar conditions.

Evidence of a new toxic factor formed by the gravis bacillus and the evidence of gravis resistance to the normal inhibiting mechanism of the throat replaces the pessimism and perplexity of the last decade with a definite working hypothesis, renewing hope of ultimate clinical mastery of malignant diphtheria. Thus far diphtheria gravis has not attained a permanent foothold in the Western Hemisphere, the recent Halifax epidemic⁸ having been successfully combated by vigorous cooperation of civil and military authorities. Perhaps its reintroduction under prospective wartime conditions is inevitable.

LISTING AMERICAN HEALTH RESORTS

The American Medical Association Committee on American Health Resorts was created by action of the Board of Trustees in 1938. Rules are published elsewhere in this issue of *THE JOURNAL* (page 379) according to which the committee proposes to compile a list of American health resorts which voluntarily choose to comply with the rules of the committee and to apply for listing on that basis.

With foreign health resorts unavailable and with the possibility that facilities of health resorts may be called on for the treatment of battle casualties and diseases arising out of military service, such resorts in the United States acquire new significance. In the United States, natural facilities encompassed in the usual conception of health resort or spa therapy, such as climate, mineral waters for bathing, drinking or packs and peloids or muds, are exceedingly profuse. The mineral waters in the United States have in various localities the important characteristics of the principal European spas, including gaseous waters, thermal waters, alkaline waters, laxative waters, sulfur waters and other types. The utilization of these natural resources in the United States has not kept pace with European practices.

The committee has therefore worked along two principal lines: (1) the development of simple yet comprehensive rules which will tend to identify health resorts with adequate facilities and appropriate medical supervision to insure the safety of patients and (2) the development of a series of scientific papers on various phases of health resort therapy. These papers are now in preparation and will appear in *THE JOURNAL* as a series of special articles beginning in the early spring of 1942.

THE CHIROPRACTIC THEORY OF INSURANCE RATING

The principal guide in the rating of insurance companies is known as Best's. This well established system uses alphabetical designations and includes the financial standing of the insurance firm, as well as an evaluation of safety factors based on the surplus, administration and other features essential to the protection of the public.

Recently one George Huff, writing on the stationery of a state chiropractic society and designating himself as Chairman of the Committee on Insurance, wrote to the president of a large insurance corporation. His letter instructed the insurance official to "read the enclosed letter carefully, giving special credence to the importance of this campaign to determine the attitude of every insurance company toward the Chiropractic profession, and advise this office at your earliest con-

6. Locke, Arthur, and Main, E. R.: *J. Infect. Dis.* 48: 419 (May) 1931.

7. Pappenheimer, A. M., Jr., and Johnson, Sylvia J.: *Brit. J. Exper. Path.* 17: 335 (Oct.) 1936.

8. *New Sci. Science (Supplement)* 92: 9 (March 28) 1941.

venience, just how soon we may expect your Board of Directors to take the necessary action to qualify your company for the class 'A-1' listing in our new directory." The enclosed letter gave further details concerning the "insurance directory" and stated that some twenty-five thousand copies would be distributed. After mentioning the fact that insurance companies will be classified according to the type of insurance they write—life, health, accident, and so on—it is stated that "For reasons which the Chiropractic profession feels justifiable, all such companies will be further classified under the following ratings:

"Class 'A-1'—will include all companies . . . *who can show proof that they have now appointed Chiropractors as examiners for their insurance applicants, or their intention to do so. . .*

"Class 'A'—will include all companies *who approve of Chiropractic services for their policy-holders or insureds, but do not qualify for the 'preferred' class 'A-1' rating, because of failure to specify Chiropractic service in their policies or otherwise fail to qualify for the 'A-1' listing.*

"Class 'B'—will contain the names of all companies, associations or societies who fail to report their position concerning this matter to this office, and companies *who are known to have attempted to evade payment of claims on the grounds that their policy-holders did not comply with the terms of their policy by employing the services of a Chiropractor.*" (Italics ours.—Ed.)

The "inducement" for complying with this proposition is presented as follows:

"To estimate the value of the 'preferred' listing to any insurance company in this directory from a dollar and cents angle would, of course, be difficult, because it involves not only the Good Will and fullest cooperation of the 25,000 Chiropractors and their families, but also their millions of patients and friends, which IS something to consider."

The letter proceeded:

"A few of the leaders in the three insurance fields operating in this state were notified of this action two months ago, and most of those contacted have already qualified their companies for the class 'A-1' rating, or are in the process of doing so now" [Sic].

The arrogant effrontery of proposing to classify insurance companies on the basis of their cooperation with chiropractors is not surprising. The pattern was established with the very advent of chiropractors. Certainly insurance companies will be little concerned beyond ordinary annoyance by this promotional material. Equally certain would be the hazard to any company that relied on physical examinations made by chiropractors. In the payment of claims for sickness and accident, the company which settles such claims on the basis of a chiropractor's statement may, at least in most states, be placing itself in the position of not closing the claim. In few states indeed is a chiropractor recognized by law as one qualified to determine the essential facts on which such claim and closure may be based. To place chiropractors in a position to render decisions in such matters would be the height of folly.

Current Comment

BUSINESS WOMEN PROMOTE HEALTH EXAMINATIONS

The National Federation of Business and Professional Women's Clubs, Inc., under the presidency of a physician and with a health advisory committee under the chairmanship of a physician, and with one additional medical member, one dental member and three lay members, has issued a leaflet entitled "Are You Fit for the Job?"¹ This pamphlet explains the health appraisal project of the federation, recommending an annual physical examination for every business and professional woman. The pamphlet analyzes the importance of health and fitness for the job. It sets forth three health ratings—the ideal, which is never wholly attainable; the actual, which is "often far below that which is possible and practicable for the individual," and the attainable, "the health that one might have with the normal appreciation and realization of health that is reasonably available for the individual." The pamphlet reproduces a health appraisal form which is to be offered the examining physician. It includes a philosophy of health and fifteen points in a healthy personality. The pamphlet also supplies instructions for health appraisal projects for local business and professional women's clubs, including a meeting for discussion to be followed by efforts to attain 100 per cent physical examinations by physicians, followed by appropriate corrective measures. Accompanying the pamphlet is a four page letter size folder carrying on its first page an introduction "To the Examining Physician: The patient presenting herself to you for examination is a member of the National Federation of Business and Professional Women's Clubs who wishes to obtain the optimal level of health possible for her. . . . She is presumably a well person actively engaged in business or in a profession. . . . This examination form has been prepared to include not only a record of physical history and physical findings but also the questions which will aid you and the patient in evaluating her design for living which should make for an integrated personality. . . . Your cooperation in obtaining a complete history and giving a careful and complete physical examination will be appreciated." Page 2 contains a form for recording an exceptionally complete health history; page 3 provides for recording a complete physical examination, including routine pelvic examinations recommended for all women but stating that special tests such as blood counts, roentgenograms, basal metabolic rate determinations, blood chemistry and the like are "recommended as indicated, but not included in routine health examination." The entire blank is to be returned to the patient for her information and subsequent guidance. This is a well conceived project which, if carried out locally according to the instructions so well developed by the national body, deserves the widespread cooperation of physicians.

1. National Federation of Business and Professional Women's Clubs, Inc., 1819 Broadway, New York. Single copy, 10 cents.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PHYSICAL REHABILITATION OF REGISTRANTS

According to a statement by Lewis B. Hershey, director of Selective Service, signed January 17, as noted in the *Federal Register*, January 21, the Selective Service regulations are amended by adding thereto a new part reading as follows:

PART 661—PHYSICAL REHABILITATION

REHABILITATION PROCEDURE

- Sec.
661.1 Determination that registrant's defects are to be remedied.
661.2 Notice to registrant to appear for consultation.
661.3 Conference with registrant and selection of physician, dentist or facility.
661.4 Use of government facilities.
661.5 Inquiry for undertaking of services to physician, dentist or facility.
661.6 Order to registrant to have defects remedied.
661.7 Procedure when registrant desires to have his defects remedied at his own expense.

DISPOSITION OF REHABILITATED REGISTRANT AND REGISTRANT WHO REFUSES TO HAVE DEFECTS REMEDIED

- Sec.
661.11 Submission of rehabilitated registrant for further physical examination by the armed forces.
661.12 Procedure when registrant refuses or fails to have his defects remedied.

DESIGNATION AND PAYMENT OF PHYSICIANS, DENTISTS AND FACILITIES

- Sec.
661.21 Designated physicians, dentists, and facilities.
661.22 Schedule of fees for the Selective Service System.
661.23 Procedure for payment of fees.

REHABILITATION PROCEDURE

§ 661.1 *Determination that registrant's defects are to be remedied.* When the Report of Physical Examination and Induction (Form 221) is received by the local board from the examining station of the armed forces with the certification that the registrant is physically and mentally qualified for military service after the satisfactory correction of certain specified remediable defects, and when the specified remediable defects are of the type which the Director of Selective Service has determined shall be remedied, the local board, in accordance with instructions issued and subject to limitations imposed by the Director of Selective Service, and with one or more of its examining physicians or dentists present as advisers, will consider whether it is practicable to remedy such defects of the registrant within a reasonable time and at a reasonable cost. If at this time or at any subsequent time there is not an agreement between the examining physician or dentist and the local board concerning the practicability of correcting such remediable defects of a registrant within a reasonable time and at a reasonable cost, the local board may send the record of the registrant or, if necessary, may send the registrant to the medical advisory board for an opinion from the appropriate member or members of that board and, giving consideration to such opinion but not being bound thereby, shall determine the course to be followed.*

§ 661.2 *Notice to registrant to appear for consultation.* If the local board decides that the remediable defects of any regis-

trant are of a type which the Director of Selective Service has determined should be remedied and that such defects can be remedied within a reasonable time and at a reasonable cost, the local board will issue a Notice to Registrant to Appear for Consultation (Form 225) which will state the hour, date, and place the registrant shall report for conference with the local board.*

§ 661.3 *Conference with registrant and selection of physician, dentist or facility.* (a) When the registrant reports in accordance with a Notice to Registrant to Appear for Consultation (Form 225), at least one member of the local board and one or more of the examining physicians or dentists will confer with him for the purpose of making arrangements for his rehabilitation. If the registrant desires to have his defects remedied at his own expense, see § 661.7.

(b) The registrant will be advised that he has certain remediable defects which may be remedied at government expense. He will also be advised that, if the defects are remedied, he will be returned to the examining station of the armed forces and, if found acceptable to them, will be forwarded for induction in the usual manner. He will be further advised that if he refuses to have his defects remedied, his defects may be waived and in such event he will be subject to induction into the armed forces.

(c) If a registrant agrees to have his defects remedied, he shall name a designated physician, dentist, or facility to undertake his rehabilitation: *Provided*, That the provisions of § 661.4 do not apply: *And provided further*, That, if the registrant desires and requests the services of a physician, dentist or facility that has not been designated, the procedure prescribed in § 661.21 will be followed, and the registrant must name a designated physician, dentist or facility as his second choice to perform the necessary services if the first named physician, dentist or facility is not accepted for designation. The local board, acting for the registrant, must name a designated physician, dentist or facility for the purpose of undertaking to remedy the registrant's defects (1) if the registrant fails or refuses to name a designated physician, dentist or facility, or (2) if the registrant names a physician, dentist or facility not designated but fails or refuses to name as his second choice one already designated and the one not designated named by the registrant fails to qualify for designation. When the local board is required to name a designated physician, dentist or facility as above, it shall do so in the following manner: The record of designated physicians, dentists or facilities furnished the local board by the State Director of Selective Service shall be consulted and the first designated and qualified physician, dentist or facility whose name appears on that record with an office in or near the community in which the registrant lives shall be the first named, the second shall be the second named, the third shall be the third named, and so on consecutively until all such designated and qualified physicians, dentists or facilities have been used, and then the process shall start over again.

(d) The registrant shall execute, in triplicate, a Registrant's Rehabilitation Statement (Form 226). If he refuses to have his defects remedied, he shall state the reason for such refusal.

(e) The signature of the registrant upon the Registrant's Rehabilitation Statement (Form 226) shall be witnessed by a member of the local board and the examining physician or dentist.

* §§ 661.1 to 661.23 inclusive, issued under the authority contained in 54 Stat. 885; 50 U. C. C., Sup., 301-318, inclusive, E. O. No. 8971, 6 F. R. 6419.

(f) If the registrant names a designated physician or dentist who practices, or a designated facility which operates, outside the community in which he lives, and there is a designated physician, dentist or facility in the community in which he lives capable of rehabilitating him, authorization may be granted for the designated physician, dentist or facility so named: *Provided*, That such authorization shall not be made if it results in unnecessary delay in the rehabilitation of such registrant, and *Provided further*, That the expense of transportation to and from the designated physician, dentist or facility shall be borne by the registrant. If there is no designated physician, dentist or facility in the community in which the registrant lives who is qualified and willing to treat the registrant, necessary travel costs to and from the nearest community in which there is a designated physician, dentist or facility qualified and willing to undertake the registrant's rehabilitation will be borne by the Selective Service System, and Government Requests for Transportation (Standard Form No. 1030) and Government Request for Meals or Lodgings for Civilian Registrants (Form 256) may be issued.*

§ 661.4 *Use of Government facilities.* If the Director of Selective Service determines that the facilities of any department, bureau or agency of the Government of the United States should be used in rehabilitating the registrants in any community, such facility shall be used to the extent that the Director of Selective Service may direct.*

§ 661.5 *Inquiry for undertaking of services to physician, dentist or facility.* After the Registrant's Rehabilitation Statement (Form 226) is completed by a registrant who is to have his defects remedied, an Inquiry for Undertaking of Service (Form 227) shall be prepared by the local board, in quadruplicate. It shall be addressed to the designated physician, dentist or facility selected to render the service for a given registrant. It shall set forth the facts relevant to the defects of the registrant and the maximum fees allowable for the correction of such defects. It shall contain an inquiry as to the desire of the physician, dentist or facility to undertake the service indicated. If the physician, dentist or facility offers to perform the services, one copy of the Inquiry for Undertaking of Service (Form 227) will be retained by the physician, dentist or facility addressed, and the original and two remaining copies will be signed and returned to the local board. The local board will forward the original and both copies of Inquiry for Undertaking of Service (Form 227), together with the Armed Forces' Original of the Report of Physical Examination and Induction (Form 221), to the State Director of Selective Service. The State Director of Selective Service shall indicate his approval, disapproval or desired modification on the original and both copies of the Inquiry for Undertaking of Service (Form 227), retain the original and return both copies, together with the Armed Forces' Original of the Report of Physical Examination and Induction (Form 221), to the local board. If the State Director of Selective Service has indicated his approval on the copies of the Inquiry for Undertaking of Service (Form 227), the local board shall forward the approved copy bearing the signature of the State Director of Selective Service to the designated physician, dentist or facility, and such approved copy will constitute authority to render the indicated service. If modifications are made by the State Director of Selective Service, the Inquiry for Undertaking of Service (Form 227), with such modifications, will be resubmitted to the designated physician, dentist or facility concerned for approval.*

§ 661.6 *Order to registrant to have defects remedied.* When the local board has received an approved copy of the Inquiry for Undertaking of Service (Form 227), it shall complete and mail to the registrant an Order to Registrant to Have Defects Remedied (Form 228).*

§ 661.7 *Procedure when registrant desires to have his defects remedied at his own expense.* If a registrant desires to have his defects remedied at his own expense, he may do so without reference to the foregoing procedure; *Provided*, That a program for remedying the defects is presented which is satisfactory to the local board. In such a case the program will be outlined in the Registrant's Rehabilitation Statement (Form 226) and will include arrangements to keep the local board

advised of the registrant's progress. If at any time after making such an arrangement, the registrant fails or refuses to have his defects remedied in the manner agreed upon, the local board may take the steps outlined in § 661.12.*

DISPOSITION OF REHABILITATED REGISTRANT AND REGISTRANT WHO REFUSES TO HAVE DEFECTS REMEDIED

§ 661.11 *Submission of rehabilitated registrant for further physical examination by the armed forces.* (a) The local board will keep informed as to the progress of the registrant while his defects are being remedied. When the registrant's rehabilitation will take more than thirty days the local board will furnish the physician, dentist or facility with sufficient Progress Reports of Rehabilitation (Form 229) so that one of such forms can be completed and returned to the local board each thirty days after the commencement of rehabilitation. A Report of Completion of Rehabilitation (Form 230) shall be filled out and forwarded to the local board by the physician, dentist or facility when the registrant's rehabilitation has been completed. When the physician, dentist or facility which has undertaken to remedy the registrant's defects has forwarded the local board a Report of Completion of Rehabilitation (Form 230), the local board will direct the registrant to appear before the examining physician or dentist of the local board and, in doubtful cases, to appear before the medical advisory board. When the local board is satisfied, from the report of the examining physician or dentist or the medical advisory board, that the remediable defects which were specified in the certificate of the examining station of the armed forces have been remedied, it shall again forward the registrant for physical examination by the armed forces in the manner provided in Part 629; provided that if the effective period for the former physical examination by the armed forces has expired, but not otherwise, it shall prepare a new Report of Physical Examination and Induction (Form 221), the Armed Forces' Original and all copies of which shall be forwarded with the registrant in addition to the Armed Forces' Original of the former Report of Physical Examination and Induction (Form 221). Upon the return from the examining station of the armed forces of the Armed Forces' Original and all copies of the corrected or new Report of Physical Examination and Induction (Form 221), or both, the local board will proceed in the manner provided by § 629.31.

(b) The local board will forward all completed Reports of Completion of Rehabilitation (Form 230) to the State Director of Selective Service for transmittal to the Director of Selective Service.*

§ 661.12 *Procedure when registrant refuses or fails to have his defects remedied.* If the registrant refuses or fails to have his defects remedied, the local board will forward to the State Director of Selective Service the original and one copy of the Registrant's Rehabilitation Statement (Form 226), the Armed Forces' Original of the registrant's Report of Physical Examination and Induction (Form 221) and its recommendation as to the disposition of the matter. Upon receipt thereof, the State Director of Selective Service will either return the file to the local board with further instructions or forward the file, together with his own recommendation, to the Director of Selective Service, or, if so instructed by the Director of Selective Service, to the Corps Area Commander (or representative of the Navy or Marine Corps).*

DESIGNATION AND PAYMENT OF PHYSICIANS, DENTISTS AND FACILITIES

§ 661.21 *Designated physicians, dentists and facilities.* (a) The Director of Selective Service shall prepare and maintain a record of designated physicians, dentists and facilities for the nation. The State Director of Selective Service shall maintain a record of designated physicians, dentists and facilities for his state. He shall furnish each local board with a record of designated physicians, dentists and facilities in or near the community in which each local board is located. If a physician, dentist or facility whose name is not included in the record of designated physicians, dentists or facilities is named by a registrant or makes a request to be designated, the local board shall endeavor to secure a written application from such physician,

dentist or facility. The local board shall forward any application it receives, together with its recommendation thereon, to the State Director of Selective Service.

(b) When the application is received by the State Director of Selective Service, he shall make a thorough investigation as to the applicant's professional and ethical standing in the community. If, after investigation, he is of the opinion that the applicant is qualified, he shall add the name of the applicant to the record of designated physicians, dentists or facilities and so advise the local boards affected. The name and address of each such physician, dentist or facility, together with the application, report of investigation made, and the action taken thereon by the State Director of Selective Service, shall be forwarded to the Director of Selective Service. In the absence of comment by the Director of Selective Service, such physician, dentist or facility shall thereafter be a designated physician, dentist or facility. The Director of Selective Service will notify the State Director of Selective Service in the event of nonconcurrency in the designation of a given physician, dentist or facility.

(c) Nothing herein contained shall prohibit any physician or dentist who is now or may hereafter be appointed an examining physician or dentist or a member of a medical advisory board from applying to the State Director of Selective Service to have his name placed in the record of designated physicians or dentists. Upon the receipt of such an application, the procedure prescribed in *b* above will be followed. If the name of such examining physician or dentist or member of a medical advisory board is placed in such record, he shall receive payment for authorized rehabilitation services in the same manner as any other designated physician or dentist, and the Waiver of Pay or Compensation portion of the Oath of Office and Waiver of Pay or Compensation (Form 21) executed by the examining physician or dentist or member of the medical advisory board shall not operate to prohibit such physician or dentist or member of the medical advisory board from receiving compensation from remedying the defects of a registrant. His services as a designated physician or dentist will be apart from, and in addition to, his present duties as an examining physician or dentist or member of a medical advisory board, which latter duty will remain on an uncompensated basis.

(d) Any designated physician, dentist or facility may be utilized by any local board in the Selective Service System. [See, however, § 661.3 (f).]

(e) A State Director of Selective Service who has reason to believe that a designated physician, dentist or facility does not have the necessary qualifications will suspend such physician, dentist or facility and will report the reason therefor and his recommendation thereon to the Director of Selective Service.

(f) The name of any physician, dentist or facility may be added to or removed from the record of designated physicians, dentists or facilities by the Director of Selective Service, either with or without a recommendation from a State Director of Selective Service.*

§ 661.22 *Schedule of fees for the Selective Service System.* The Director of Selective Service, from time to time, will publish and circulate schedules of fees which will state the maximum amounts allowable for the services of any physician, dentist or facility in remedying the defects of a registrant. These amounts will in no case be exceeded unless specifically authorized under instructions issued by the Director of Selective Service. When services not contained in the schedule of fees are necessary, such services may be authorized and the fees to be paid therefor in each instance fixed by the Director of Selective Service. Payment will not be authorized for any services rendered in remedying the defects of a registrant which are not authorized in accordance with instructions contained in this part, unless payment for such services is specifically approved by the Director of Selective Service either prior to or subsequent to the performance of such services.*

§ 661.23 *Procedure for payment of fees.* Bills for payment of fees authorized to be charged for services rendered in remedying the defects of a registrant should be certified in the manner prescribed in § 608.5 and presented, in triplicate, to the local board, which, if it finds that the authorized services have been performed, will indicate its approval on the original and both copies of the bill, retain one copy thereof, and forward the original and second copy thereof to the State procurement officer. In vouchering such bills, the State procurement officer shall use Public Voucher for Purchases and Services Other Than Personal (Standard Form No. 1034), which will be prepared in the manner prescribed in § 608.31.*

Jan. 17, 1942.

LEWIS B. HERSHEY, *Director.*

[F. R. Doc. 42-580; Filed, Jan. 20, 1942; 11:58 a. m.]

VACCINATION AGAINST TYPHUS FEVER, CHOLERA AND PLAGUE

Circular Letter No. 3

GENERAL PROVISIONS

The War Department has directed (section III, War Department Circular No. 4, dated Jan. 6, 1942):

(a) That all military personnel stationed in or traveling through Asia, Africa, continental Europe or other areas where danger from epidemic typhus fever exists will be immunized with typhus vaccine as prescribed by the Surgeon General.

(b) That all military personnel stationed in or traveling through Asia or other regions where cholera is known to be present in endemic or epidemic form will be immunized with cholera vaccine as prescribed by the Surgeon General.

(c) That all military personnel under serious threat of exposure to epidemics of human bubonic or pulmonic plague will be immunized with plague vaccine as prescribed by the Surgeon General.

INSTRUCTIONS CONCERNING VACCINATIONS

The following instructions will govern the use of typhus, cholera and plague vaccines:

(a) *Typhus Fever.*—1. Type and Source of Typhus Vaccine: The typhus fever vaccine to be used for the

immunization of military personnel will be of types approved by the Medical Department. At present the approved vaccine consists of a suspension of killed, louse-borne, epidemic typhus rickettsiae prepared by the Cox yolk-sac culture method. The vaccine may be procured in 20 cc. vials by requisition through regular Medical Department supply channels.

2. Initial Vaccination: This will consist of three injections of the vaccine, 1 cc. each, administered subcutaneously, with intervals of from seven to ten days between injections.

3. Subsequent Vaccinations: A stimulating dose of 1 cc. of typhus vaccine may be administered every four to six months as long as serious danger of infection is present. Other 1 cc. doses of typhus vaccine may be given whenever in the opinion of the surgeon this additional stimulation of immunity is indicated.

(b) *Cholera.*—1. Type and Source of Cholera Vaccine: The vaccine to be used will be of a type approved by the Medical Department. The vaccine now approved consists of a suspension of 8,000 million killed cholera vibrios (*V. comma*) per cubic centimeter. It may be

procured in 20 cc. vials by requisition through regular Medical Department supply channels.

2. Initial Vaccination: This will consist of two subcutaneous injections of cholera vaccine with an interval of from seven to ten days between the injections. The first dose shall consist of 0.5 cc. and the second dose shall consist of 1 cc. of the vaccine.

3. Subsequent Vaccinations: A stimulating dose of 1 cc. of cholera vaccine may be administered every four to six months as long as serious danger of infection is present. Other 1 cc. doses of cholera vaccine may be given whenever in the opinion of the surgeon this additional stimulation of immunity is indicated.

(c) *Vaccination Against Plague.*—1. Type and Source of Plague Vaccine: The vaccine supplied by the Medical Department consists of a suspension of 2,000 million killed plague bacilli per cubic centimeter. It may be procured in 20 cc. vials by requisition through regular Medical Department supply channels.

2. Initial Vaccination: This will consist of two subcutaneous injections of plague vaccine with an interval of from seven to ten days between injections. The first dose shall consist of 0.5 cc. and the second dose shall consist of 1 cc. of the vaccine.

3. Subsequent Vaccinations: Additional 1 cc. doses of plague vaccine may be administered whenever in the opinion of the surgeon additional stimulation of immunity is indicated.

OPPORTUNITY TO PREMEDICAL AND MEDICAL STUDENTS FOR APPOINTMENTS AS ENSIGNS IN CLASS H-V. (P.) U. S. NAVAL RESERVE

The Secretary of the Navy recently approved a change in Navy regulations whereby it is now possible for those premedical students who have been accepted for entrance to, and all medical students in, class A medical colleges to be appointed in the United States Naval Reserve in class H-V. (P.), provided they meet the physical and other requirements for such appointment.

Students who are acceptable will be given provisional commissions as Ensigns, and it is the policy of the Bureau of Medicine and Surgery not to nominate such officers for active duty until after they have completed their prescribed medical studies and shall have served one year's satisfactory internship in a civilian hospital accredited for intern training, or shall have been accepted as Acting Assistant Surgeon in the Navy for intern training.

On graduation, and when the bureau has been informed of this fact by the dean, commissions as Lieutenant (junior grade) M. C.-V. (G.), U. S. N. R., will be issued to provisional Ensigns and, after serving their internship in non-naval hospitals, they will be nominated for active duty. Application for, or acceptance of, either a provisional or a permanent commission in the Naval Reserve does not preclude the possibility of applying for a commission in the Medical Corps of the regular Navy. Persons affiliated with the Naval Reserve are not subject to induction into Army service by action of local Selective Service boards.

Navy regulations require that all applications for appointments in the Naval Reserve be filed with the commandant of the naval district in which the applicant resides. The address of the commandant of one's district may be obtained from the dean of one's college.

Application forms may be obtained from the dean's office or from some one designated by him on request from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., or from the commandant of one's naval district. When the application form has been properly completed, it, together with the other credentials indicated on the application form, should be mailed to the commandant of the naval district. He will

MISCELLANEOUS

(a) *Storage and Shipment.*—The storage and shipment requirements of typhus, cholera and plague vaccines are the same as for triple typhoid vaccine.

(b) *Records of Vaccination.*—When military personnel are vaccinated against typhus, cholera or plague, records in duplicate will be made on MD form 81, Immunization Register. Disposition of these records will be in accordance with paragraph 6, AR 40-215.

(c) *Interval Between Doses.*—The prescribed time interval between doses of these vaccines should be adhered to as closely as possible; but, when this cannot be done, the missed dose or doses should be administered as soon as possible and a new series should not be started.

(d) *Efficacy of Vaccination.*—It is imperative to realize that vaccination alone is not adequate for the prevention of typhus, cholera or plague. The immunity conferred by these vaccines is incomplete and probably of relatively short duration. The practice of vaccination should therefore be considered an adjunct to the control measures prescribed in AR 40-225, AR 40-230, and such other special control measures as may be recommended by the surgeon of the force concerned.

By order of the Surgeon General:

JOHN A. ROGERS, M.D.,
Lieutenant Colonel, M. C.,
Executive Officer.

give instructions relative to obtaining a physical examination, finger prints, and so on.

In the case of a premedical student, it is necessary to enclose with the application for appointment a statement, signed by the dean of a medical college, to the effect that the applicant has been accepted as a first year medical student in a class A school for the next entering class.

It is the understanding of the Bureau of Medicine and Surgery that Selective Service boards will accept a statement from the commandant of the naval district to the effect that the application is on file as basis for deferment until the application has received final action.

PRICES OF SALICYLIC ACID AND THEOBROMINE

The Office of Price Administration, Washington, D. C., of which Leon Henderson is administrator, announced on January 20 that the establishment of maximum prices on salicylic acid and theobromine would be discussed with manufacturers and distributors at a conference called for January 21. The two additional products were added to the conference subjects because of the close relationship of salicylic acid to acetylsalicylic acid and theobromine to caffeine, because discussion of the additional products might better suit the convenience of the manufacturers and avoid calling further conferences, and also because the Office of Product Management had received reports that some supplies of these products had been offered at prices greatly in excess of prevailing prices.

LIEUTENANT COLONEL MORGAN ORDERED TO ACTIVE DUTY

Dr. Hugh J. Morgan, Nashville, Tenn., a lieutenant colonel in the medical corps reserve, has been called to active duty as head of the subdivision of medicine, professional services division, in the Office of the Surgeon General, U. S. Army, Washington, D. C., the War Department announced, January 20. Colonel Morgan has been on the staff at Vanderbilt University, Nashville, since 1924. During the first world war he served in the American Expeditionary Forces, first as a private and later as a first lieutenant in the medical corps.

ORGANIZATION SECTION

THE PHYSICIAN'S FEDERAL INCOME TAX—1942

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION

In view of the fact that March 15 falls on a Sunday this year, income tax returns must be filed on or before March 16, unless an extension of time for filing has been granted.

While the Revenue Act of 1941 did not basically change the structure of the existing income tax act, it did lower exemptions, increase surtax rates and in many other ways effect changes the overall result of which will be a sharp increase in the total tax that physicians and other taxpayers will be required to pay. The basic rate remains the same, 4 per cent on net income in excess of allowable exemptions and credits. The surtax this year is imposed on the first dollar of net income above the personal exemption and credit for dependents. The surtax rate is 6 per cent on the first \$2,000 and 9 per cent on the second \$2,000, with a constant increase in the rate for incomes in the higher brackets.

The earned income credit remains in the law and as heretofore may be claimed in connection with the normal tax but not in connection with the surtax. The special 10 per cent defense tax that was applicable last year has been eliminated as such.

A departure from previous practice is to be found in the provision for a simplified tax schedule for use by taxpayers having gross incomes of \$3,000 or less derived wholly from salaries, wages, other forms of compensation for personal services, dividends, interest, rents, annuities or royalties. The use of the simplified form is optional. If the taxpayer has no deductions it will be to his advantage to use this form. If he has deductions he should tentatively figure the tax under both the regular method and the optional method and use whichever method results in the smaller tax.

WHO MUST FILE RETURNS

In General.—1. Returns must be filed by every unmarried person and by every married person not living with spouse, if gross income during 1941 was \$750 or more.

2. Returns must be filed by every married person who lived with spouse, if gross income during 1941 was \$1,500 or over. If both husband and wife had income and their combined gross income was \$1,500 or over, they must either file separate returns or, if both are citizens or residents of the United States and if they were living together at the end of the taxable year, they may file a joint return. If a person was married and lived with spouse for only part of 1941, special rules apply with respect to the filing of returns, and physicians who come within this classification should read carefully the instructions given on the tax return blanks.

If the status of a taxpayer, so far as it affects the personal exemption or credit for dependents, changed during the year, the personal exemption and credit must be apportioned, under rules and regulations prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury, in accordance with the number of months before and after

such change. For the purpose of such apportionment a fractional part of a month should be disregarded unless it amounts to more than half a month, in which case it is to be considered as a month.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue, without request. Failure to receive a blank does not excuse any one from making a return; the taxpayer should obtain the necessary blank from the local collector of internal revenue.

Physicians in Military or Naval Service.—The fact that a physician may be in service does not of itself excuse a failure to file a return, for the income tax act applies to persons in service as well as to persons engaged in civilian activities. Physicians who have been inducted into service, therefore, should if at all possible file complete returns before the deadline. While, unfortunately, definite regulations have not been issued to cover the situation, it is understood that, if because of the inaccessibility of necessary records a physician in service is unable to file a complete return, he may file a tentative return on which he must estimate his income, deductions and tax as best he can and indicate on the return his reasons for following this procedure. He will be required at a later date to file a complete return, and necessary adjustments in the tax will be made.

If a physician in service is on duty outside the United States, the general regulations promulgated by the Bureau of Internal Revenue provide for an extension of time for filing a return up to and including the fifteenth day of the sixth month following the close of the tax year. In all such cases an affidavit must be attached to the return, stating the cause of the delay in filing.

GROSS AND NET INCOMES: WHAT THEY ARE

Gross Income.—A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, assuming that the return is made on a cash receipts and disbursements basis, plus such money as he has received as profits from investments and speculation and as compensation and profits from other sources.

If a physician receives a salary as compensation for services rendered and in addition thereto living quarters or meals, the value to the physician of the quarters and meals so furnished ordinarily constitutes income subject to tax. If, however, living quarters or meals are furnished for the convenience of the employer, the value thereof need not be computed and added to the compensation otherwise received by the physician. As a general rule, the test of "convenience of the employer" is satisfied if living quarters or meals are furnished to a physician who is required to accept such quarters and meals in order to perform properly his duties. For example, if a physician employed by a hospital is subject to immediate service at any time during the twenty-four hours of the day and therefore cannot obtain

quarters or meals elsewhere without material interference with his duties and on that account is required by the hospital to accept the quarters or meals furnished by it, the value thereof need not be included in the gross income of the physician.

Net Income.—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income, to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year as stated before. These matters are fully covered in the instructions on the tax return blanks.

Earned Income.—In computing the normal tax, but not the surtax, there may be subtracted from net income from all sources an amount equal to 10 per cent of the earned net income, except that the amount so subtracted shall in no case exceed 10 per cent of the net income from all sources. Earned income means professional fees, salaries and wages received as compensation for personal services, as distinguished from receipts from other sources.

The first \$3,000 of a physician's net income from all sources may be regarded under the law as earned net income, whether it was or was not in fact earned within the meaning set forth in the preceding paragraph. Net income in excess of \$3,000 may not be claimed as earned unless it in fact comes within that category. No physician may claim as earned net income any income in excess of \$14,000.

PHYSICIANS IN MILITARY OR NAVAL SERVICE

As previously pointed out, physicians in service are as much subject to the income tax law as are physicians engaged in civilian practice. The service pay of such physicians must be reported as income. Commutation of quarters and rental value of quarters occupied by medical officers, however, are not taxable income.

If the ability of physicians in service to pay income taxes is materially affected by such service, payment of the tax falling due before or during the service may be deferred for a period extending not more than six months after termination of service. This deferment is authorized by section 513 of the *Soldiers' and Sailors' Civil Relief Act of 1940* and applies to all members of the Army, Navy, Marine Corps and Coast Guard, and to all officers of the United States Public Health Service detailed by proper authority for duty either with the Army or Navy, on active duty or undergoing training or education under the supervision of the United States preliminary to induction into service. This does not apply to the tax imposed on employers by section 1400 of the Federal Insurance Contributions Act.

DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. So far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

Office Rent.—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for

office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in such dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

Office Maintenance.—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants are deductible.

Supplies.—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted; but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

Equipment.—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment, such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation reductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year; office furniture, 5 per cent a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price or, if purchased before March 1913, either its fair market value as of that date or its original cost.

whichever may be greater. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in his individual case.

In a Treasury Decision, approved Feb. 28, 1934, No. 4422, it was held, among other things, that:

1. The cost to be recovered shall be charged off over the useful life of the property.

2. The reasonableness of any claim for depreciation shall be determined on the conditions known to exist at the end of the period for which the return was made.

3. Where the cost or other basis of the property has been recovered through depreciation or other allowances, no further deduction for depreciation shall be allowed.

4. The burden of proof will rest on the taxpayer to sustain the deduction claimed.

5. The deduction for depreciation in respect to any depreciable property for any taxable year shall be limited to such ratable amount as may reasonably be considered necessary to recover during the remaining life of the property the unrecovered cost or other basis.

Particular attention is called to the last of the foregoing provisions. If, in prior years, rates have been claimed which, if continued, will fully depreciate the cost, less salvage, before the end of its useful life, based on conditions now known, a reestimate of the remaining useful life should now be made and the portion of the cost that had not been depreciated at the beginning of the year 1941 (for a return for the year 1941) should be spread over this reestimated life.

Medical Dues.—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

Postgraduate Study.—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

Traveling Expenses.—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

Automobiles.—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is possessed by the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct

depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood. What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

MISCELLANEOUS

Contributions to Charitable Organizations.—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. A physician may not, however, deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

Bad Debts.—Physicians who make their returns on a cash receipts and disbursements basis, as most physicians do, cannot claim deductions for bad debts.

Taxes.—Taxes generally, either federal or state, are deductible by the person on whom they are imposed by law. Both real and personal property taxes are deductible; but so-called taxes, more properly assessments, paid for local benefits, such as street, sidewalk, and other like improvements, imposed because of and measured by some benefit inuring directly to the property against which the assessment is levied, do not constitute an allowable deduction from gross income.

Physicians may deduct state gasoline taxes if such taxes are imposed on the consumer or user rather than on the seller or distributor. The same is true with respect to state sales taxes. In some states these taxes are imposed on the seller and, even though they may be passed on to the buyer, the latter may not deduct them. The federal gasoline tax is not imposed on the user and hence cannot be deducted by him.

State income and use taxes are deductible; federal income taxes are not. Among the federal taxes that a physician may deduct are those on admissions, dues, initiation fees, safety deposit boxes and tax on telegraph, telephone, cable and radio messages. State automobile license fees are deductible. If a state or local fee is imposed for regulatory purposes, and not to raise revenue, the fee may not ordinarily be deducted as a tax. If such fees, however, are classifiable as a business expense, they are deductible as such. Annual registration fees imposed on physicians probably come within the category of regulatory fees and should be deducted as a business expense rather than as taxes. Local and state occupational taxes imposed on physicians are deductible either as taxes or as a business expense, depending on the purpose for which the tax is imposed.

The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold

the amount of the tax from the employee's wages, the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

Equipment Necessitated by Military Service.—The cost of equipment of an Army officer to the extent only that it is especially required for his profession and does not merely take the place of articles required in civilian life is deductible. Accordingly, the cost of a sword has been held to constitute an allowable deduction, but the cost of a uniform is considered a personal expense and hence not deductible.

Laboratory Expenses.—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

Losses by Fire or Other Causes.—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense

and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

Insurance Premiums.—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

Expense in Defending Malpractice Suits.—Expense incurred in the defense of a suit for malpractice is deductible as a business expense.

Sale of Spectacles.—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

OFFICIAL NOTES

THE ATLANTIC CITY SESSION

Applications for Hotel Reservations

A list of Atlantic City hotels, together with the rates for rooms, may be found on advertising page 34 of this issue of *THE JOURNAL*. With this list will be found an application form that may be used to secure reservations through the Subcommittee on Hotels of the Local Committee on Arrangements. This application form may be clipped and, when it is properly filled in, should be sent at once to Dr. V. Earl Johnson, Chair-

man of the Subcommittee on Hotels, The Convention Bureau, 16 Central Pier, Atlantic City, N. J.

Those who expect to attend the annual session of the American Medical Association should send in their applications at the earliest possible time. Applicants for reservations are especially requested to include a second and a third choice in order that good accommodations may be assured if the desired reservation cannot be had at the hotel of preference. It will greatly expedite matters if requests for reservations are addressed directly to Dr. Johnson.

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

New York

Bill Enacted.—A. 40 has been enacted as Chapter 1 of the Laws of 1942, providing that nothing in the nursing practice act shall be construed as prohibiting the practice of nursing by other than registered or practical nurses until one year following the cessation of hostilities.

Bills Introduced.—S. 66 and A. 61 propose that a cause of action to recover damages for malpractice shall not be deemed to have accrued until the discovery by the injured person of the facts constituting the malpractice but that in no event can such an action be instituted after six years from the occurrence of the alleged malpractice. S. 111 and A. 11 propose that every physician attending or treating a case caused by an automobile accident, or whenever such case is treated in a hospital, sanatorium or other institution, the manager, superintendent or other person in charge, shall report such case at once to the police authorities of the city, town or village where such physician, hospital, sanatorium or institution is located. S. 125 proposes that the provisions of the New York State unemployment compensation act shall apply with respect to persons employed in the preparation and handling of food for human consumption in hospitals and educational institutions which at this time are exempt from the provisions of the act. A. 83 proposes that in any city of a million or more population there shall be maintained by the board of education a permanent staff of physicians, dentists, dental hygienists and nurses for the periodic examination and promotion of the health of the school children. A. 153

proposes to authorize the state department of health to render free of charge to all inhabitants of the state "all medical, surgical, dental, nursing care and treatment and all other services and facilities known to science and designed or adapted for use in all cases of sickness, accidents and childbirth . . . maintenance in hospitals, the furnishing and supplying without cost of medicines, drugs" and all other necessary equipment and supplies. The bill proposes to increase the staff of the department so as to include all registered physicians, dentists, pharmacists, technicians, research and laboratory workers and all other persons practicing allied professions who elect to serve and to pay them salaries in accordance with the schedule fixed in the bill. The department is to be authorized to exercise exclusive control over all public hospitals and is to have complete supervisory powers over all private hospitals and the staff, officers and employees thereof. A. 155 proposes to require a physician's certificate as to physical condition as a condition prerequisite to the issuance or renewal of operators' and chauffeurs' licenses to operate motor vehicles.

Rhode Island

Bill Introduced.—H. 536 proposes to create the Special Health Insurance Fund Commission to study sickness and health in the state and all pending federal legislation with the purpose in view that, if Congress should initiate a federal health insurance law which will require appropriate action by state legislatures, the commission will be in a position to recommend to the general assembly such action as it deems expedient for the adequate medical care of the population of the state.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Courses in Pediatrics.—Thirteen physicians selected from rural areas of California, Nevada, Utah and Arizona are enrolled in an intensive refresher course at the University of California Medical School, San Francisco, on the care of infants and children, according to the university's *Clip Sheet* of January 13. Designed for general practitioners, the course is being given by Dr. Amos Christie, associate professor of pediatrics, and members of the medical school staff, in cooperation with the state department of public health and the California Medical Association. The department of public health of the state from which the physician comes pays his tuition and traveling expenses, these funds being obtained from the children's funds of the social security act. The program is closely connected with the circuit rider plan of the university and the California department of health. Under this plan Dr. Sydney E. Sinclair, associate in pediatrics at the medical school, travels over California as an agent of the state department of health, acting as a consultant for county medical societies, individual physicians and groups involved in the care of young children.

DISTRICT OF COLUMBIA

Society Adopts Plan for Periodic Examination.—The Medical Society of the District of Columbia has approved a project whereby periodic health examinations will be available to the District general population at a set fee of \$5 and at a meeting on January 7 incorporated the program as a permanent and integral part of the society's activities. The examination will not be a diagnostic procedure but one to determine the physical fitness of apparently healthy persons. Physicians themselves are urged to participate in the program in order that they too may be given physical examinations. Cooperation of the Health Security Administration and local medical schools is being sought so that persons entitled to free medical service will receive periodic health examinations in clinics of local hospitals. In setting up the project, "Periodic Health Examinations—A Manual for Physicians," published by the American Medical Association, was used as a basis for the study by the committee on public health of the District society.

ILLINOIS

Personal.—Dr. Edwin S. Hamilton, Kankakee, was recently appointed a member of the medical examining committee of the state department of registration and education, succeeding Dr. Milton M. Portis, Los Angeles, who resigned.—Dr. Benjamin L. Sargent, Park Ridge, has been appointed health officer of Park Ridge to succeed the late Dr. Irvin J. Pascoe, Park Ridge.

Chicago

The Sixth Fenger Lecture.—Dr. James P. Simonds, professor of pathology, Northwestern University Medical School, will deliver the sixth Christian Fenger Lecture of the Institute of Medicine and the Chicago Pathological Society at the Palmer House, February 27. His subject will be "Clinical Correlation of the Anatomic and Functional Pathology of Renal Disease."

Society News.—Dr. Charles Gordon Heyd, New York, will address the Chicago Medical Society, February 18, on "Consideration of the Hepatorenal Syndrome," and Dr. Andrew C. Ivy, "Rationale of Bile Salt Therapy."—The Chicago Laryngological and Otological Society will be addressed, February 2, by Drs. Noah D. Fabricant on "Present Status of Nasal Medication"; Hans Brunner, "Otitic Brain Abscess," and Arnold A. Zimmerman, Ph.D., "Origin and Development of Pharyngeal Lymphoid Structures."

IOWA

Personal.—Dr. Thomas A. Burcham, Des Moines, was chosen on December 17 as chairman of the state medical advisory council for civilian defense, a subcommittee of the state industrial defense commission.—Dr. Celia A. McNeely, formerly of Corinth, N. Y., has been appointed physician in charge of the girls' division of the state school at Glenwood.

State Ophthalmologic Meeting.—Dr. Stephen A. O'Brien, Mason City, was chosen president-elect of the Iowa Academy of Ophthalmology and Otolaryngology at its annual meeting in Iowa City, December 5, and Dr. Thomas R. Gittins, Sioux City, was installed as president. Dr. Carl A. Noe, Cedar Rapids, is secretary-treasurer. Dr. Harris P. Mosher, Marblehead, Mass., Walter Augustus Lecompte professor of otology and professor of laryngology, emeritus, Harvard Medical School and the graduate school, Boston, was guest speaker at the session.

State Society Reviews Educational Activities.—The speakers' bureau of the Iowa State Medical Society has published a report of its activities for 1941. Eleven postgraduate courses were held during the year, including one which began in the fall of 1940, comprising seventy lectures. Ninety-one medical talks were given before various lay organizations throughout the state. Of the thirty-six scientific recordings sent out during this period, twenty were meetings of county medical societies and sixteen for hospital staff and medical club meetings. A new type of educational activity this year was the cooperation with the division of industrial hygiene of the state department of health and the state medical society's committee on industrial health in sponsoring nine special institutes on industrial hygiene in key cities throughout the state. Fifty-two radio broadcasts were given and one thousand, seven hundred and eleven copies of the manuscripts were mailed out in response to requests received, an increase of about 75 per cent in the number of talks requested by radio listeners. In connection with each broadcast, an announcement concerning smallpox was made in an effort to reduce the incidence of the disease in Iowa.

KENTUCKY

Mother of First Male Quintuplets in America Dies.—

Mrs. Elizabeth Lyon, aged 84, mother of the first male quintuplets born in the United States, died on December 29 at the home of her son Martin Lyon near Kevil, Ky. On April 29, 1896, Mrs. Lyon gave birth to five sons in Mayfield. They were named Matthew, Mark, Luke, John and Paul. All were normal and weighed between 4 and 5 pounds at birth. The first one died four days after birth and the last one died thirteen days after birth. They were buried in the War Memorial Museum, Washington, D. C. The late Dr. Samuel J. Mathews, Mayfield, was the physician who attended Mrs. Lyon. A newspaper, in commenting on Mrs. Lyon's death, stated that "crowds came from as far away as Memphis and dropped more than \$600 in a glass jar to help the family." Two passenger trains that passed Mayfield in the daytime would each stop across from the Lyon home so that passengers might alight and see the quints, who were placed on the porch in "mosquito netting" covered cradles.

MARYLAND

Portrait of "The Musketeers of Medicine."—A life-size portrait of Drs. Guy L. Hunner, Thomas S. Cullen and Samuel Griffith Davis Jr., all of Baltimore, has been placed in the waiting room of the Church Home and Infirmary, Baltimore, the gift of the graduate nurses of the institution. The portrait is the work of Mrs. I. Hunner Parsons, daughter of Dr. Hunner. The three physicians are known as the "Three Musketeers" of medicine because of their close association for more than forty years with the staff of the Church Home. Dr. Hunner is adjunct professor emeritus of gynecology and Dr. Cullen is professor emeritus of gynecology at Johns Hopkins University Medical School, while Dr. Davis is professor of anesthesia at the University of Maryland School of Medicine. Dr. Cullen is a former member of the Board of Trustees of the American Medical Association.

MASSACHUSETTS

New Cancer Arrangement at Massachusetts General.—On January 15 the inpatient and outpatient services for the diagnosis and treatment of cancer of the Collis P. Huntington Hospital, Boston, were transferred to the Massachusetts General Hospital, Boston. As soon as facilities have been made available, a substantial part of the research work in cancer at Huntington Memorial will also be transferred to the general hospital (THE JOURNAL, January 3, p. 58). The action was taken because of the belief of Harvard University and Massachusetts General Hospital that the care and treatment of medical specialties can more efficiently be handled as part of a large institution of general scope than in smaller individual units.

Grant to Biologic Library.—The Marine Biological Laboratory, Woods Hole, has received a grant of \$25,000 from the Carnegie Corporation of New York to be used primarily to complete back sets of journals and to add to its collection of books, according to *Science*. The gift will enable the library to provide investigators with complete runs of all the important biologic journals and of many covering chemistry, physics, paleontology, radiology, medicine and other sciences allied to biology. Under a gift from the Rockefeller Foundation in 1940, the library is now located in a new building which more than doubles the original space. In 1920 the number of serials received was 153; now it is 1,257. The collection of reprints has increased from 8,500 to 120,000.

MISSOURI

Society News.—Dr. Clarence A. Mills, Cincinnati, discussed "Climate and Weather as Health Factors" before the Kansas City Academy of Medicine, December 12.—Dr. Richard G. Helman, Kansas City, discussed eclampsia before the Nodaway-Atchison-Gentry-Worth Counties Medical Society, December 1, in Maryville.—Dr. Ora Earl Whitsell, St. Joseph, discussed "Foreign Body in the Air and Food Passages," January 7, before the Buchanan County Medical Society, St. Joseph.—Dr. James C. Sargent, Milwaukee, discussed "Common Injuries Involving the Urinary Tract" before the St. Louis Medical Society, December 16, under the auspices of the St. Louis Urological Society.

Ear, Nose and Throat Meeting.—The middle section of the American Laryngological, Rhinological and Otolological Society presented the following program at a meeting in St. Louis, January 21:

- Dr. Joseph C. Beck, Chicago, Ways and Means of Studying Gross Pathology of Otolaryngology and Its Borderlines.
- Dr. Thomas Roy Gittins, Sioux City, Headache and Neuralgia.
- Dr. Samuel Iglauer, Cincinnati, Autopsy Studies of a Case of Tuberculous Peripharyngeal Abscess.
- Dr. Dean M. Lierle, Iowa City, Arteriovenous Aneurysm: Report of a Case Involving the Transverse Facial Artery and Vein.
- Dr. Carl H. McCaskey, Indianapolis, Upper Respiratory Infection of a Fulminating Character Requiring Tracheotomy.
- Dr. Sam E. Roberts, Kansas City, Ear, Nose and Throat Conditions Due to Disturbed Nutrition.
- Dr. John J. Shea, Memphis, Tenn., Office Treatment of Vertigo.
- Dr. Jacob Marion Sutherland, Detroit, Medical Research and War Problems: Forewarned Is Forearmed.

NEW MEXICO

Changes in Health Personnel.—Dr. Stuart W. Adler, Albuquerque, has been appointed director of the division of maternal and child health of the state department of public health, succeeding Dr. Hester B. Curtis, now of Charleston, W. Va.—Dr. Roy H. Wilson, Clovis, recently resigned as health officer of district number 10.

Public Health Election.—Dr. Alvin R. Clauser, Albuquerque, was chosen president-elect of the New Mexico Public Health Association at its recent sixteenth annual meeting in Gallup, and Dr. Frank C. Diver, Raton, was installed as president. Dr. Harrison Eilers, Las Vegas, is vice president, and Frances Fell, Santa Fe, secretary-treasurer.

NEW YORK

Health Department Honors Retiring Physicians.—The Rochester Department of Health gave a dinner recently in honor of Dr. Joseph Roby, since 1904 deputy health officer, and Dr. James T. McGovern, since 1900 health physician, to mark their retirement, both having reached the compulsory age limit for retirement. Dr. Roby was presented with a wrist watch by employees of the health department and Dr. McGovern was presented with a traveling bag.

Grant for Work on Rheumatic Fever.—An award of \$1,000 has been made by the Borden Company to Irvington House, Irvington, to assist in its study and treatment of rheumatic fever. The researches are under the direction of Dr. Ann G. Kuttner, Irvington, resident medical director, with the guidance of a medical advisory board, of which Dr. John Murray Steele, New York, is director. About one hundred young underprivileged patients are cared for at Irvington House.

New York City

Alumni Day at New York University.—The date of the annual "Alumni Day" at New York University College of Medicine has been changed back to the usual dates of February 20 and 21, according to an announcement from the secretary. Dr. Marshall S. Brown Jr. A dinner at the Hotel Essex will open the program Friday; a scientific session will make up the second day's activities.

Courses at Mount Sinai Hospital.—The second semester of postgraduate courses will open at Mount Sinai Hospital, February 2, to continue through March 28, covering bacteriology, cardiology, gynecology, general medicine, medical statistics, neurology, ophthalmology, pathology and pediatrics. A course on radiology will be given in affiliation with Columbia University College of Physicians and Surgeons.

Dedication of New Dispensary.—The new million dollar Dispensary Building of Kings County Hospital, Brooklyn, was recently dedicated. Among those participating were Dr. Joseph Tenopir, chairman, executive committee of the medical board of the hospital; Dr. Maurice J. Dattelbaum, president of the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn; Dr. Willard C. Rappleye, commissioner of hospitals, and Mayor Fiorello H. La Guardia.

Personal.—Dr. Francis Peyton Rous of the Rockefeller Institute for Medical Research has been elected an honorary fellow of Trinity Hall, University of Cambridge, where he was awarded the honorary degree of Sc.D. He was Linacre lecturer there in 1929.—Dr. Harry A. La Burt, assistant physician of Harlem Valley State Hospital at Wingdale, has been named superintendent to succeed Dr. John R. Ross, who has been transferred to Hudson River State Hospital at Poughkeepsie.—Dr. Donald E. Cameron, Albany, N. Y., has been appointed a member of the state board of psychiatric examiners.

Annual Regional Meeting on Social Hygiene.—The Coordinating Council of the five county medical societies, the New York Academy of Medicine and the five medical schools in New York will participate in the tenth annual Regional Conference on Social Hygiene, to be held at the Hotel Astor on February 4 under the auspices of the social hygiene committee of the New York Tuberculosis and Health Association in cooperation with local public and private educational health and welfare agencies. The speakers at a session on social hygiene and national defense will include Dr. Raymond A. Vonderlehr, assistant surgeon general, division of venereal diseases, U. S. Public Health Service, Washington, D. C.; Capt. Charles S. Stephenson, M. C., U. S. Navy, in charge of the division of preventive medicine, Washington, D. C.; Dr. Edward S. Godfrey Jr., state health commissioner, Albany, and Major John A. Warner, superintendent of the state police. Other speakers on the program will include Drs. Ross T. McIntire, surgeon general of the U. S. Navy, Robert M. Lewis, New Haven, Conn., and Robert C. Clothier, LL.D., president, Rutgers University, New Brunswick, N. J. The program has been divided into the following sessions: the nurse and social hygiene, firm foundations for family living, social hygiene films and national defense, a panel discussion on venereal diseases, the United Service Organizations program and social hygiene, current delinquency problems and youth today and tomorrow—a challenge.

OHIO

Changes in Health Officers.—Dr. Chester S. Heimlich, Attica, has resigned as health officer of Seneca County to devote his full time to private practice, it is reported.—Dr. Homer S. West, St. Clairsville, has been appointed health commissioner of Belmont County, filling the vacancy that occurred when Dr. William B. Baily, now of Morgantown, W. Va., resigned several months ago.

Postcollegiate Assembly Canceled.—The Ohio State University College of Medicine, Columbus, has canceled its ninth annual postcollegiate assembly, which had been announced for March 5-7, because of the present war emergency. The faculty of the medical school believes it should render every service to the program of medical military and civilian defense and will cooperate, in an educational way, with the Ohio State Council of Defense and other war to victory efforts.

Library Given to Academy of Medicine.—The late Dr. Martin Stamm, Fremont, was posthumously made an honorary member of the Toledo Academy of Medicine recently, and plans are under way to erect a plaque in his memory to be hung in the academy. The joint tribute marks the acknowledgment by the academy of a collection of medical books which Dr. Stamm had bequeathed to the Birchard Library in Fremont. The library in turn presented the collection to the academy of medicine.

Ten Years as President of County Society.—Dr. Edward F. Heffner was reelected president for the tenth consecutive year of the Auglaize County Medical Society at its meeting in Wapakoneta in December. Dr. Clyde W. Berry was chosen secretary. Dr. Charles C. Berlin had served the society for eleven years as secretary but contended that twelve years would be too long a term when the association had numerous good members able to fill the office. All are of Wapakoneta.

Conference on Medical Service.—The National Conference on Medical Service, formerly the Northwest Regional Conference, will hold its sixteenth annual meeting at the Palmer House, Chicago, February 15, under the presidency of Dr. Harold M. Camp, Monmouth, Ill. The program will open with a consideration of "The Relation of the Physician to Military, Civilian and Industrial Health" by Dr. Sam F. Seeley, executive officer of the Procurement and Assignment Service, Washington, D. C.; Graham Davis, Ph.D., Battle Creek, Mich., Drs. John R. Nilsson, Omaha, and William D. Norwood, Joliet, Ill. "The Role of the State Medical Society and State and City Department of Health in National Defense" will be discussed by Drs. William P. Wherry, Omaha, Walter L. Biering, Des Moines, Iowa, and Herman N. Bundesen, Chicago. "Rejected Selectees and Their Rehabilitation for Active Mil-

tary Service" will be discussed by Drs. Samuel J. Kopetzky, New York, George Baehr, New York, and Laurance D. Redway, Ossining, N. Y., and J. Roy Blayney, D.D.S., Chicago. "The Role of the Medical, Dental, Nursing Schools and Hospitals in Anticipating the Acceleration of Training" will be the subject of Drs. Joseph R. Darnall, Washington, D. C., Leonard G. Rowntree, Washington, D. C., and Fred C. Zapffe, Chicago.

Notice to Manufacturers of Glandular Preparations.—On Dec. 1, 1939, in a notice addressed to manufacturers of preparations of ovary, the Food and Drug Administration expressed the opinion that preparations of ovary recommended for oral administration which are devoid of the known active constituents of that gland are adulterated and misbranded if labeled in a manner implying that such active constituents are present. The same principle is applicable to preparations, recommended for oral use, of corpus luteum and "ovarian residue," and to preparations of various other glands including orchic, adrenal and pituitary. In particular there is no scientific evidence that preparations of the named glandular substances, except concentrated estrogenic extracts of ovaries, exhibit any physiologic or therapeutic effects when administered through the gastrointestinal tract. Some of the preparations of these glands intended for parenteral administration also have been found devoid of any significant activity. Any such inert preparation is regarded as misbranded unless reference on its labeling to the presence of such glandular constituents is accompanied by a forthright, conspicuously displayed statement to the effect that the article does not contain any known therapeutically useful constituent of the gland or glands mentioned. Further, there is no scientific evidence that prostate, pineal and mammary contain any therapeutically or physiologically active constituents. The labeling of articles purporting to be preparations of these glands should, in the opinion of the administration, bear conspicuously displayed statements to this effect. Section 201(n) of the Federal Food, Drug and Cosmetic Act requires, in effect, the revelation of such material facts. Labeling which merely disclaims responsibility of the manufacturer for activity of an article is not regarded as complying with this provision of the law.

LATIN AMERICA

Personal.—Dr. Mario L. Soto, La Plata, Argentina, has been appointed professor of pharmacology at the University of Buenos Aires; he will devote his time to research and will give up his clinical connections, *Science* reports.

Congress on Plastic Surgery.—The second Latin American Congress of Plastic Surgery will be held in Buenos Aires in October, the dates to be announced later. Two papers now being planned for discussion are "Labiovelopalatine Fissure" and "Plastic Reparation of Great Loss of Substances of the Face." The first subject will be discussed by Drs. Enrique Apolo, Héctor Marino and J. Dellepiane Rawson and the second by Drs. Mario Kroeft, David Adler and Oscar Ivanissevich. Drs. Ivanissevich, Alejandro Ceballos and Enrique Finochietto, all of Buenos Aires, are members of the organizing committee in charge of the congress.

CORRECTIONS

Roentgen Therapy of Gas Bacillus Infection.—In the editorial with this title in *THE JOURNAL*, January 17, page 230, in the thirteenth line, the number 500 is erroneous with respect to the roentgen dose and it should have been 50. The sentence should read "From 50 to 100 roentgens per field should be given two to three times daily for a period of three to five days."

The Emigré Physician in America, 1941.—In the article with this title in *THE JOURNAL*, Nov. 29, 1941, page 1887, a paragraph begins with the statement "A bill was recently passed in California which would deny the license even to a California native son who happens to be a graduate of a foreign school, unless the country in which the school is located extends reciprocity to Americans." Dr. C. B. Pinkham, secretary of the California Board of Medical Examiners, has written to the National Committee for Resettlement of Foreign Physicians that the committee has been wrongly advised as to the legal interpretation of this portion of the California statutes and particularly as to that portion which reads "if the applicant is not a citizen of the United States." This phraseology exempts citizens of the United States from the requirement of what is referred to as "reciprocity."

Government Services

Community Expansion and Improvement Program

President Roosevelt has approved an appropriation of \$150,000,000 to provide through federal grants a general expansion and improvement program throughout the country. Under this setup hospitals, health centers, sanitary facilities, schools and recreation centers will be added to communities which, if left to their own resources to provide these needs, would be unduly burdened financially and which, because of increased defense activities, are in need of such additions. The federal grants are aimed to assist the local units in carrying out necessary improvements. Up to November 26 health centers and hospitals had been approved for twenty-three states, Hawaii and Alaska, and provision for sanitary facilities had been approved for thirty-four states and Hawaii and Alaska.

Recommendations Concerning Narcotics

According to an announcement from the Office of Civilian Defense, morphine is the only narcotic now being recommended for use by emergency field units. These units are related to hospitals and it is planned to give morphine only as ordered by physicians. It is hoped that local hospitals and physicians will not attempt to procure large stocks of the drug. The release pointed out that narcotics would be purchased centrally through the office of the surgeon general of the U. S. Army and would be allocated to communities as part of the supplies furnished by the Office of Civilian Defense. It was recommended that narcotics should not be stored in the same manner as other supplies which are stored in the emergency field units but should be placed in a warehouse of the licensed wholesaler from which it is purchased and requisitioned by the hospital and emergency field units through the regional medical officer. At the hospitals, narcotics should be locked in a place approved by the U. S. Commissioner of Narcotics or his agent until such time as the narcotic may be needed. It is urged that regional medical officers establish contact with the state chiefs of emergency medical service in their respective regions and request that this information be transmitted to local chiefs of emergency medical services and the hospitals.

Warning Against Cadmium in Cooking Utensils

Because of outbreaks of food poisoning, the Federal Security Agency has advised manufacturers against using cadmium, a substitute for aluminum, in plating cooking utensils and refrigerator containers. The Food and Drug Administration and the U. S. Public Health Service, following an investigation of outbreaks, have found that they were due to cadmium, which they said contained a poisonous substance causing severe illness when taken in food even in small amounts. The Federal Security Agency has conferred with representatives of the plating industry, and it is probable that this industry will cease using cadmium for food container purposes. At the same time the Office of Production Management has stated that it would not release cadmium for this use.

Five of the outbreaks, involving at least fifty persons, were traced to the consumption of frozen food which had either been chilled in refrigerators equipped with cadmium plated ice trays or served in cadmium plated metal containers. Symptoms of cadmium poisoning include acute gastritis, nausea, cramps, vomiting, diarrhea and weakness. Illness may occur within ten minutes after eating or drinking the contaminated food. As little as 15 parts per million of cadmium may cause acute symptoms. Foods containing acids are particularly apt to be affected. None of the recently reported cases resulting from the consumption of cadmium with foods have been fatal. Chronic poisoning, with severe damage to vital organs, will, however, result from repeated exposure. The difficulty of obtaining aluminum and materials used in making stainless steel has led to the use of cadmium, especially in repairing or replating household equipment.

Utensils in which cadmium has most frequently been detected are refrigerator ice trays, plated aluminum ware, water pitchers, meat grinders, and food choppers and mixers.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 13, 1941.

The Prevention of Hospital Infection of Wounds

The war has brought into prominence certain surgical problems which have been investigated by the Medical Research Council, which has produced valuable memoranda. Among these are the treatment of wound shock, the diagnosis and treatment of gas gangrene and emergency amputations, which have been summarized in previous letters to *THE JOURNAL*. The latest one, on the prevention of hospital infection of wounds, has been produced by the War Wounds Committee of the Council and the Committee of London Sector Pathologists, whose members include eminent surgeons and pathologists. They point out that recent prewar studies have revealed a low but definite incidence of hospital infection, indicating defects of aseptic technic. In war time the consequences are more obvious, because war wounds are more liable to infection and many of them, being infected before admission, provide an abundant reservoir of pathogenic bacteria. During this war several observers have recorded a high incidence of hospital infection. This memorandum is the outcome of a study of the problem in several hospitals. The bacteria which may infect wounds in a hospital include *Streptococcus pyogenes*, *Bacillus pyocyaneus*, coliform bacilli, the diphtheria bacillus and occasional anaerobic spore bearing bacilli. Commonest and most important are the pyogenic streptococci and staphylococci. The diphtheria bacillus rarely infects wounds. Hemolytic streptococci (most of which are *Streptococcus pyogenes*) normally live in from 5 to 30 per cent of human throats. *Staphylococcus pyogenes* normally lives in from 20 to 40 per cent of human noses and on 10 to 20 per cent of human skins. Hospital infection may be derived from throats, noses and skins, but a more important reservoir is in other wounds already infected. Contamination occurs by contact with soiled fingers, instruments and lotions, by infected droplets from the mouths and noses of those near when dressings are off and from the dust of the air of the ward. Contact is probably the commonest mode of infection.

Since wounds are protected from infection except when dressings are being done, "cross infection" should be easier to control than another kind of cross infection also found in hospitals—infection from the upper respiratory tract. The analogy between a wound and a culture on a Petri dish suggests the principle for the handling of wounds in the ward. The dresser, like the bacteriologist, works in an environment of infected dust and dirty objects, among which strict bacteriologic control must be maintained over a comparatively small area, which is exposed for the shortest possible time. In the ward a wound should be treated much as a bacteriologist treats a plate culture. The technic need not be as elaborate or as costly as that of the operating room.

Dressings which are extensive or complicated and which involve prolonged exposure and manipulation of the wound cannot be protected by the precautions which suffice for simpler dressings in the ward and should be done in a room set aside for the purpose. When dressings are in progress, precautions should be taken to keep the bacteria in the ward air as low as possible. One hour at least during which sweeping, dusting, bed making and other activities which raise dust are forbidden should precede the dressing. During the dressing and before it, while the trolley is being prepared, doors and windows are closed and traffic through the ward is stopped. Bedclothes are to be manipulated gently and slowly. Hands, whether wet or dry, scrubbed or unscrubbed, are to be regarded as in all circumstances dirty and should not be allowed to touch the wound

or anything which comes in contact with it. Sterile gloves are worn for dressings too complicated to be managed with forceps alone. Wounds are to be uncovered for the shortest possible time. The skin around the wound should be treated with the same care as the wound itself. It is easier to keep things sterile if they are dry. Hands and instruments should be dry, since, if they are wet, bacteria are readily washed from them into the wound. The most perfect dressing technic may not prevent infection unless the sterilizer, baths, utensils, floors and all ward accessories are properly cared for. When dressings begin the ward is closed to all nonessential traffic, windows and doors are shut, and all in the ward (except patients, provided they remain silent) don a mask. Surgeons, nurses or students suffering from upper respiratory inflammation of any kind must at once go off surgical duty and remain off until the inflammation has completely subsided. Convalescent carriers and healthy carriers, recognized by swabbing but not suffering from active inflammation, should remain off duty only while swabs yield profuse cultures. The danger of wound infection from droplets can be reduced to a minimum if all taking part in surgical work wear masks. Sterilization of instruments and equipment by boiling is preferable to chemical disinfection, because it is more reliable and less costly. But for certain purposes chemical disinfectant solutions are indispensable.

The Food Situation

In the House of Commons at the opening of a new session the prime minister, Mr. Churchill, surveyed our food situation. We had curtailed our food imports in favor of munitions, and our dietary was so curtailed that it was less varied and interesting, but it was sufficient for physical health, and he hoped soon to give more meat to workers who need it most. As a precaution we had amassed stocks of the bulky articles of our diet, which amounted to double what they were in September 1939. There had been a great expansion of the home production of food. In the short space of two years the area under crops had been increased by 45 per cent. Our corn harvest was 50 per cent greater than in 1939. We also had large crops of potatoes, sugar beet, fodder and roots. Despite lack of feeding stuffs we had well maintained our head of cattle, both dairy cows and meat cattle. Our people would have better Christmas dinners than last year, and dinners which would be more justified by the food position. It will thus be seen that the favorable reports on the food situation made in previous letters to *THE JOURNAL* are borne out. In a nutshell, we are not getting such food as we should like but what is sufficient for maintaining health and capacity for work.

THE FEEDING OF YOUNG CHILDREN

In consequence of the government food control, young children were probably never so well fed. The latest measure is the free distribution of fruit juices and cod liver oil to all children born after Jan. 1, 1940. This important new step to safeguard the health of very young children is being taken by the Ministry of Food in cooperation with the Ministry of Health. The Ministry of Food has requisitioned most of the last black currant crop, and the first issue will consist of black currant syrup and purée. When these have been used, concentrated orange juice—a lease and lend offering from the United States—will be available. Sufficient of either will be provided to insure that each child has an adequate daily supply of vitamin C.

Concurrently with both fruit essences, cod liver oil compound made from Icelandic oil will be issued in sufficient amount to insure a satisfactory intake of vitamins A and D. Distribution will be made through maternity and child welfare centers and food offices. Some 1,360,000 children will benefit. The object of the government is to build up the resistance of these young children before the onset of severe winter weather. After three or four months the scheme will be reviewed and a decision taken as to whether the scheme should be free to all.

Winter has reduced supplies of liquid milk, which will become progressively smaller for all but expectant and nursing mothers, children and persons in the hospital. This shortage will continue until February or March, but the priority classes mentioned are assured of their supplies. They number twelve million and will receive 40 per cent of the milk supply, while the rest of the population, thirty-two million adults, will receive 60 per cent. Cuts have been made in the supplies to catering establishments. The new milk movements branch of the Ministry of Food is endeavoring to equalize as far as possible supplies over the whole country. It has ready for distribution this month forty million cans of unsweetened condensed milk. The same amount will be available for December. The United States, Canada and New Zealand have sent us all the processed milk they could provide; in addition, twelve million cans of milk powder will be available through the grocers' shops.

Health Publicity

To encourage the taking of every possible precaution against illness during the autumn and winter the minister of health has decided, in collaboration with the Central Council for Health Education, to intensify health education activities. In particular, special efforts are being made to secure the cooperation of the public in reducing the spread of diseases caused by droplet infection, such as influenza and the common cold, as well as diphtheria, measles, whooping cough, cerebrospinal fever and tuberculosis. In normal times influenza and the common cold alone are responsible for between 30 and 40 per cent of the working hours lost in industry.

Show cards and posters (some eighty thousand in all, including reproductions of drawings by the artist H. M. Bateman) are exhibited in busses, street cars and underground trains, at main line railway stations, in chain stores and in the vestibules of cinemas. They are also exhibited in factories. They carry the message "Coughs and sneezes spread diseases. Trap the germs by using your handkerchief. Help to keep the nation fighting fit."

This campaign was opened by the chief medical officer of the Ministry of Health at a press conference. The minister of health has sent a circular embodying the facts to the local health authorities (county councils, county borough councils and maternity and child welfare authorities). He has asked them to cooperate in the campaign in every possible way. He has suggested that, in addition to providing facilities for displaying the posters, members and officers of the council may secure the publication of topical articles in the local press or arrange film shows. Copies of "Breath of Danger," a sound film recently made for health education to illustrate the dangers of unguarded coughing and sneezing, are available at the library of the Central Council for Health Education and will be issued on free loan to approved borrowers for nontheatrical showing. Finally, a three weeks display of posters on droplet infection is taking place in the windows of fifteen hundred stores and gas and electricity undertakings throughout the country.

Air Raid Precautions for Users of Radium

The minister of home security, in consultation with the Ministry of Health, has had under consideration the question of the safe custody, handling and transport of radium under war conditions. In addition to the radium held by hospitals under arrangements with the Radium Commission and King Edward's Hospital Fund for London, an appreciable amount is in the hands of small hospitals, physicians and commercial firms. The minister has decided that for the protection of the public it is necessary to bring to the notice of all who have the custody of radium the precautions which should be taken to avoid its dispersal by enemy action and the course to be followed in the event of its dispersal.

All radium exceeding 1 mg. in amount, not in actual use, should be kept in a bore hole or steel container of approved type. The bore hole should have a depth of about 50 feet, depending on the nature of the subsoil. It should be lined with steel tubing and have a diameter of 6, 8 or 10 inches, depending on the amount of radium to be stored. The bottom of the shaft should be cemented. At the ground level there should be a superstructure consisting of a concrete enclosure with a door fitted with winch and cable to raise or lower the radium receptacle.

The approved type of steel container consists of a block of mild steel, either round or square in section, with a central cavity and a screwed plug to seal this. The receptacle is protected by a layer of resilient material, such as cork or rubber, which is within the cavity. The wall thickness of the steel block must not be less than 3 inches. Not more than 350 mg. of radium should be kept in one steel container. In a hospital situated in a vulnerable area, not more than this amount should be in use at any one time. Radon should be used instead of radium when this is possible without loss of therapeutic efficiency. Patients should not remain under treatment by radium during an air raid unless in a basement or ground floor room strengthened up to the approved standard for an air raid shelter.

Radium should not be transported through the medium of the post office. It should be sent either by a special messenger or by a passenger train, in which case it should be handed to the guard and taken over from him at the station of destination. If less than 10 mg. is so conveyed, it should be enclosed in a container lined with 3 mm. of lead. For 10 to 50 mg. the container should be supported in the center of a box of a minimum of 1 foot in every dimension.

In the event of dispersal of radium—actual or suspected—the occurrence should be notified to the health officer, who will arrange for the danger area to be cordoned off immediately after fire and casualties, if any, have been dealt with. The occurrence should then be notified to the minister of health, who will arrange for experts to examine the site and advise as to further action.

Improving Health in the Army

Recent developments in the work of the army medical corps at home and abroad include a new type of convalescent depot. Situated in healthful surroundings and often near the sea, these depots have their own kitchen gardens and fowl yards and facilities for dancing and games. Massage and electrical treatment are available. Another institution is the army physical development center, which is designed to make the most of men who in the ordinary course would have been rejected because of slight physical disabilities. The object is to raise men just below category A to that standard by means of physical treatment. It is held that this can be done in 75 per cent of the cases. Another important branch of the work of the corps is the training of doctors in military duties, such as assessment of fitness, medical inspection, military sanitation (including improvised sanitation in the field) and cooperation in physical training. The newly commissioned medical officer first goes to a three months course at a depot and afterward to the Army School of Hygiene. There is a course on chemical warfare and another on tropical diseases.

Air Raid Casualties in October

As reported in previous letters, the civilian casualties from air raids when the indiscriminate bombing of our cities was at its height ran into thousands killed. With the great falling off of such attacks our casualties have become much fewer. The latest monthly figures show that 262 persons were killed in October and 361 wounded to the extent of being detained in hospitals. The casualties are classified as:

	Men	Women	Under 16
Killed or missing.....	136	92	34
Injured	186	129	46

BUENOS AIRES

(From Our Regular Correspondent)

Nov. 15, 1941.

The Prevalence of Venereal Disease

The Chilean minister of health, Dr. Salvador Allende G., recently published an extensive report on "Realidad Médico-Social Chilena." It reveals among other things that during the year 1938 more than twelve thousand women were registered as prostitutes. Of four thousand three hundred prostitutes who were examined monthly two thousand (64.4 per cent) were found to be either diseased or capable of transmitting disease. In Santiago de Chile alone three thousand prostitutes were registered. In more than two thirds of the cases social distress was the cause of the prostitution. A considerable number became prostitutes before they had completed their sixteenth year.

The decrease in syphilis in Argentina has been reported before. A new examination by Dr. D. A. Tello reveals that since the issuance of the law for the crusade against venereal disease (1937) the percentage of treated cases of syphilis has considerably decreased in the city of Cordoba, that is, from 0.17 in 1938 and 0.25 in 1939 it decreased to 0.0134 during the first five months of the year 1940. This reduction is ascribed to several causes: better possibilities for treatment, internment of the prostitutes until they are completely cured and better collaboration of the police.

On the other hand, it has been reported (H. Maciel, *Folha méd.*, Jan. 5, 1941) that in the Brazilian navy syphilis has increased in an alarming manner; according to the statistics of the Instituto Naval de Biologia for the years 1936, 1937 and 1938 an average incidence of 56.95 per cent of syphilitic infections must be expected among the members of the naval forces.

Results of the Second Latin American Congress for Criminology

At the second Latin American Congress for Criminology, which was held in Santiago during the first part of 1941, a number of resolutions were adopted. It was recommended that knowledge of the blood groups be generally disseminated for medicolegal purposes. Without definitely asserting the advisability of a classification of mental diseases, it was considered necessary to abolish differences in terminology employed by jurists and psychiatrists to improve mutual understanding. Moreover, terms which are no longer applicable in psychiatry are to be removed from legal compendiums. Constitutional perverts are to be subjected to protective measures. In the present state of biologic knowledge it is not possible to adopt eugenic measures that aim at a possible removal of criminal descendants. The conclusions of psychoanalysis are of unquestionable worth and should be taken into consideration in modern systems studying the suppression and prophylaxis of crime. Physical and mental hygiene of the inmates of prisons is to be considered, and suitable facilities and institutes are recommended for this purpose.

Campaign Against Cancer in Chile

A recent publication of N. Romero O. surveys the history of the campaign against cancer in Chile. After Dr. Lucas Sierra, together with his students Moya Camus, Montero Rodriguez, Mardones Acosta and Moenckeberg, at the beginning of this century, had begun disseminating current knowledge of cancer, a cancer institute was founded by Dr. Max Westhoeff in 1911 at the medical school of Santiago. In 1923 Romero began the campaign against cancer. During the same year radium became available and in 1930 the Instituto Nacional del Radium was officially opened. Its first director was Dr. Pardo Correa; on his death in 1933 he was succeeded by the present director, Dr. Leonardo Guzmán. The institute has eighty-five

beds, sixty-five of which are for women and twenty for men; twenty-five are for incurable patients. The institute has 1.5 mg. of radium and is equipped with x-ray apparatus. In addition to diagnosing and treating cancer patients, it gives postgraduate courses and organizes "cancer weeks." In 1937 the Comité Central Permanente del Cáncer was founded, which has branches in the most important cities; in 1940 the Liga Nacional del Cáncer was organized under the direction of Dr. Guzmán.

Gonorrheal Conjunctivitis

The Argentine ophthalmologist Dr. R. Laje Weskamp made the following observation on gonorrheal conjunctivitis: In the fourth division of the Argentine army, which includes some northern and western provinces (five thousand men) only 2 cases were observed in five years and both of them were unilateral. In an ophthalmologic clinic which treated 7,500 new patients from 1934 to 1940, only a single case was observed. On the other hand, a survey in 1937 disclosed 6,800 blind persons among thirteen million inhabitants. According to a census of the national institute for the blind, gonorrheal conjunctivitis is responsible for one third of the cases of blindness.

The Number of Physicians in Latin America

According to an announcement in the *Boletín de la Oficina Sanitaria Panamericana* the number of physicians in the different Latin American countries is as follows: Argentina 11,900, Bolivia 1,058, Brazil 25,000, Chile 2,061, Colombia 1,000, Costa Rica 170, Cuba 3,100, Dominican Republic 350, Ecuador between 500 and 600, El Salvador 200, Guatemala 500, Haiti 252, Honduras 130, Mexico between 13,000 and 15,000, Nicaragua 240, Panama 175, Paraguay 150, Peru 1,200, Puerto Rico 325, Uruguay 1,500 and Venezuela 1,200. The numbers for Brazil and Mexico probably include a number of not regularly trained and approved practitioners.

Regulation of Official Sale of Quinine in Argentina

In Argentina large quantities of quinine and other substances for the prophylaxis and treatment of malaria are dispensed free of charge or at very low prices. In order to prevent profiteering by reselling, special regulations have been issued which forbid and are intended to prevent resale except with a special permit of the Departamento Nacional de Higiene. The colors white and red have been reserved for this officially controlled quinine; that is, quinine which is retailed privately to the public cannot have these colors regardless of whether it is imported or domestically produced.

Marriages

JOSEPH PAGE POLLARD, lieutenant (j. g.) M. C., U. S. Navy, Tappahannock, Va., to Miss Mary Ruth Walker of Burlington, N. C., at Pensacola, Fla., Nov. 28, 1941.

MARION A. KING, Northampton, Mass., to Mr. Arthur C. Moulton of West Newfield, Maine, Oct. 4, 1941.

O. W. JOHNSON, Michigan City, Ind., to Miss Dorothy Herbert of Pottawattomie Park, Nov. 20, 1941.

ALEXANDER W. TERRELL JR., Dallas, Texas, to Miss Jeanne C. Braniff of Oklahoma City, Dec. 6, 1941.

PAUL NICKERSON, Sylacauga, Ala., to Mrs. Rachel Johns Nickerson at Siluria in November 1941.

HOWARD W. BEAVER, Rensselaer, Ind., to Miss Anna Louise Lorenz of Indianapolis, Oct. 19, 1941.

JULES I. KLFIN, Morgantown, W. Va., to Miss Henriette Liepold of Cincinnati, June 24, 1941.

FORD S. WILLIAMS, New Orleans, to Miss Anne Ella Fugate in Hazlehurst, Miss., Nov. 8, 1941.

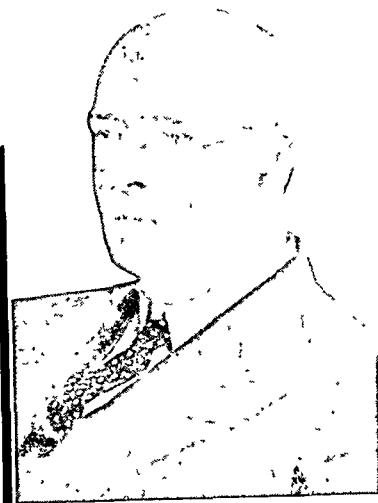
WILLIAM JAMES COLLINS, Washington, D. C., to Miss Catherine C. Doran, May 30, 1941.

EDWARD J. DIEROLF, Crown Point, Ind., to Miss Geneva M. Nelson of Gary, Nov. 8, 1941.

Deaths

William Dick Cutter * Chicago, aged 63, Secretary of the Council on Medical Education and Hospitals of the American Medical Association since 1931, died at the home of his daughter in Johnson City, Tenn., January 22. Dr. Cutter was born in Brooklyn, Sept. 14, 1878. He received his A.B. degree from Yale University in 1899 and his M.D. degree from Johns Hopkins University School of Medicine in 1905. During the year 1900 he did graduate study in Berne, Switzerland. From 1899 to 1901 he was assistant in physiologic chemistry in Columbia University College of Physicians and Surgeons; from 1905 to 1906, resident physician and surgeon in the French Hospital in New York City. The following years were spent as a member of the hospital staff of the Copper Queen Consolidated Mining Company in Bisbee, Ariz. Thereafter Dr. Cutter concerned

himself wholly with medical education, becoming professor of physiology and pharmacology in the University of Georgia School of Medicine, 1911 to 1919; secretary of the State Board of Medical Examiners of New York from 1919 to 1923; dean of the New York Post-Graduate Medical School, 1923 to 1928, and dean of the School of Medicine of the University of Southern California from 1928 to 1931. Since 1931 he had devoted himself wholly to the work of the Council on Medical Education and Hospitals, in which position he earned the friendship and respect of leaders in medicine, and particularly in the



WILLIAM D. CUTTER, M.D.,
1878-1942

field of medical education, throughout the country. Under his leadership the annual Congress on Medical Education and Licensure assumed increasing significance. Before the attack of coronary thrombosis from which he died he had been intensively engaged in problems concerned with the maintenance of high standards of medical education under the conditions of the national emergency. Dr. Cutter was a fellow of the American College of Physicians and a member of the American Association for the Advancement of Science. For his scholarship he was awarded membership in Phi Beta Kappa and Sigma Xi. His contributions to medical literature were concerned primarily with problems of medical education. Since 1933 he had served also as manager-editor of the *Federation Bulletin* of the State Medical Boards. In his position in the headquarters office of the American Medical Association, which he occupied for eleven years, he carried great responsibility and manifested leadership.

Charles Davison * Chicago; Chicago Medical College, 1883; an Affiliate Fellow of the American Medical Association; professor of surgical anatomy, 1899-1900, adjunct professor of surgery from 1900 to 1905, professor of surgery from 1905 to 1917, professor and head of the department of surgery from 1917 to 1925 and since 1926 emeritus professor at the University of Illinois College of Medicine; assistant surgeon, Illinois Charitable Eye and Ear Infirmary from 1887 to 1892; served as attending surgeon at various times at the Cook County Hospital, president of the medical staff from 1917 to 1919 and chief of the department of surgery, 1919-1920; founder and formerly attending surgeon, West Side Hospital; surgeon in chief, University Hospital, from 1907 to 1942; surgeon, Research and Educational Hospital, 1925-1926; consulting surgeon, Illinois Masonic Hospital; one of the founders and fellow of the American College of Surgeons; fellow of the Founder's Group American Board of Surgery; president of the Chicago Surgical Society 1912-1913; trustee of the University of Illinois from 1905 to 1911; author of "Autoplastic Bone Surgery," 1916; aged 84; died, January 19, of cerebral hemorrhage.

Eugene Sterling Kilgore * San Francisco; Harvard Medical School, Boston, 1909; member of the House of Delegates of the American Medical Association in 1920, secretary of the Section on Practice of Medicine from 1922 to 1925 and chairman 1925-1926; assistant in medicine at the University of California Medical School from 1912 to 1914, instructor from 1914 to 1916, assistant professor from 1916 to 1925, associate clinical professor from 1925 to 1930 and since 1930 clinical professor; member of the Association of American Physicians; served during the World War; was consultant in cardiovascular diseases for the U. S. Veterans Bureau for many years; on the consultant staffs of the French Hospital and the Chinese Hospital; chief of medical department, St. Joseph's Hospital; aged 63; died, January 2, of coronary thrombosis.

Broadstreet Henry Mason * West Hartford, Conn.; Medical School of Maine, Portland, 1907; member of the New England Society of Psychiatry; past president of the Connecticut Hospital Association; instructor in psychiatry at the University of Michigan Medical School, Ann Arbor, from 1921 to 1923 and assistant director of the Psychopathic Hospital during the same period; neuropsychiatrist to the United States Veterans Bureau; assistant superintendent from 1914 to 1918 of the Worcester (Mass.) State Hospital and acting superintendent from 1918 to 1921; first assistant superintendent of the Peter Bent Brigham Hospital, Boston, from 1923 to 1927; superintendent of the Waterbury (Conn.) Hospital from 1927 to 1941; aged 60; died, January 1, of heart disease.

George de Tarnowsky * Chicago; Northwestern University Medical School, Chicago, 1900; professor of surgery at the University of Illinois College of Medicine; formerly clinical professor of surgery at the Loyola University School of Medicine; past president of the Chicago Gynecological Society; president of the Chicago Surgical Society, 1938-1939; served as a colonel in command of the 378th regiment during the World War; was awarded the Distinguished Service Medal and was an Officer of the Legion of Honor of France; attending physician, Cook County Hospital, from 1913 to 1920; author of "Surgery of the Zone of the Advance" and "Emergency Surgery"; aged 68; on the staff of the Ravenswood Hospital, where he died, January 20, of cerebral hemorrhage.

William Lamar Bryan Jr. * Columbia, S. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1939; at one time assistant in the department of anatomy at his alma mater; from July 1940 through June 1941 served on the faculty of Tulane University of Louisiana School of Medicine, New Orleans as instructor in the department of neuropsychiatry; since July 1941 served as professor of hygiene and assisted his wife as university physician at the University of South Carolina; aged 27; died, Dec. 10, 1941, in the Providence Hospital of renal failure.

Anthony Parisi, Newark, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1918; member of the Medical Society of New Jersey; fellow of the American College of Surgeons; attending surgeon, St. Michael's Hospital and Columbus Hospital; assistant surgeon, Newark City Hospital; consulting anesthetist, Hospital of St. Barnabas and for Women and Children; aged 48; died, Dec. 18, 1941, of coronary occlusion.

Joseph Brettauer * New York; Karl-Franzens-Universität Medizinische Fakultät, Graz, Austria, 1887; member and in 1928 president of the American Gynecological Society; fellow of the American College of Surgeons; consulting gynecologist, Mount Sinai Hospital, New York; United Hospital, Port Chester, N. Y., and the New Jersey State Hospital, Greystone; aged 78; died, Dec. 26, 1941, of coronary artery disease.

Thomas William Plant * Chicago; Bennett Medical College, Chicago, 1916; fellow of the American College of Surgeons; for many years on the staff of St. Mary of Nazareth Hospital; aged 54; died, Dec. 29, 1941, of injuries received in an automobile accident.

Wilson R. Scott, Dayton, Ohio; Chicago Physio-Medical College, 1898; aged 75; died, Dec. 7, 1941, in the Miami Valley Hospital of coronary thrombosis.

KILLED IN ACTION

Samuel Earle Johnson * Medical Inspector, Commander, United States Navy; Vanderbilt University School of Medicine, Nashville, Tenn., 1911; entered the regular navy Dec. 27, 1920; aged 52; was killed during the Japanese raid on Pearl Harbor, Dec. 7, 1941.

Bureau of Investigation

VARIOUS "CURES" BANNED FROM THE MAILS

Abstracts of Some U. S. Post Office Fraud Orders

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of *THE JOURNAL*. Following are brief abstracts of some fraud orders not dealt with previously.

Bumpass Medicine Co.—This concern, also known as Bumpass Medicine Co., was conducted at Corinth, Miss., by a Mrs. Ethel Bumpass. Through the mails she represented that her "Bumpass Asthma Treatment" would overcome asthma, that "Bumpass T. B. Remedy" would cure tuberculosis and that "Bumpass Body Builder Tonic" would correct rundown, debilitated and underweight conditions. Of course, she employed the usual testimonials. Government chemists reported that the tuberculosis nostrum was essentially a water-alcohol suspension containing pine tar and invert sugar, in an acidic, viscous, cloudy brown liquid containing a small amount of ground plant material, that the asthma mixture was chiefly an acidic water-alcohol solution containing a reducing sugar and tannin from plant extracts, and that the "body builder" contained the same ingredients plus an alkaloidal material. As it was found that Mrs. Bumpass was not a physician, chemist or pharmacist and employed no one possessing these qualifications, and as expert medical testimony showed that her nostrums would not produce the implied results, a fraud order was issued against the business on Oct. 29, 1940.

Purviance Sanitarium.—This outfit at Lincoln, Neb., was run by a Walter Charles Purviance, M.D., who is not a member of the American Medical Association. The records indicate that he has advertised in news papers and that he was actively connected with John R. Brinkley (with whose record readers of *THE JOURNAL* are quite familiar) when the latter was running his outfit at Milford, Kan. It is not surprising that, like some other associates of Brinkley in his "gland cure" promotion, Purviance later went into the business on his own and advertised as a "prostate specialist." The Post Office investigation revealed that he sent out a form letter in which he boasted, "For many years I have been performing the 'Compound Operation'." (The latter was Brinkley's stock in trade.) But if one had prostate trouble and was unable to go to the Purviance Sanitarium, he could treat himself at home with Purviance's "P. R. Tablets." Further, he was told that that nostrum was "not a patent medicine" but "a private prescription," and "the chief ingredient has remarkable curative properties which have been thoroughly demonstrated by laboratory experiments, and by administration to men over a period of thirty years." Besides it "reduces enlarged prostates," "tones up the bladder" and "restores lost manhood." What "pep" nostrum vender could offer more? And what was this "remarkable" remedy? Government chemists reported that each $\frac{1}{2}$ grain (0.3 Gm.) tablet contained about 4 grains (0.26 Gm.) of chromium sulfate. Expert medical testimony was introduced which showed that chromium sulfate is not recognized as having any valuable effect in treating prostatic or any other disorder, that it is only slightly absorbed by the body and that absorption of chromic acid by the system in any considerable degree would produce poisonous effects rather than benefit. As the business was shown to be a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, a fraud order was issued against W. C. Purviance and the Purviance Sanitarium on Jan. 19, 1940.

Rose Dorf's Cosmetics.—Two products, "Skin Life" and "Dorf's Beauty Lotion," were promoted through the mails by a Rose Dorf of New York, operating variously as "Mme. Cecelia" and "Mme. Rose Dorf," who previously had engaged in the millinery business and had no medical training. When first cited by the Post Office Department, she admitted that she knew nothing about cosmetics or their "dangers and liabilities" and added that because of dwindling receipts she was abandoning her enterprise. As no evidence developed to show that she had done so, the Post Office again took up the case and produced expert medical testimony regarding the composition of her preparations and the falsity of the claims made for them. It was shown that "Skin Life" consisted essentially of ammoniated mercury in a base of hydrous wool fat and possibly some wax and that not only would it be useless for ridding the face of pimples, liver spots and wrinkles, as it was represented to do, but the ammoniated mercury that it contained would make it dangerous to use. It was further shown that "Rose Beauty Lotion" was chiefly salicylic acid and could effect no more than a superficial peeling of the skin, without removing the underlying factors responsible for pimples, blackheads, oily skin and other conditions for which it was advertised. A fraud order was issued against the names of Mme. Rose Dorf and Mme. Cecelia on April 21, 1941.

T. M. Laboratories.—This Chicago concern, also known as Tobaccoline Sales Division, was run by a W. K. Miller and a J. P. Thomas, who operated from a post office box and sold "Tobaccoline" by mail as a cure for the tobacco habit. Their advertising decryd the use of any competing product and declared that "Tobaccoline is not a patent medicine." Obviously it was nothing else. Government chemists reported it to consist of capsules each containing $\frac{1}{2}$ grain (0.008 Gm.) lobeline sulfate with milk sugar. Expert medical testimony was introduced to show that since the effects of lobeline are the same as or similar to those of nicotine, this nostrum did not and could not afford a "safe," "sure" and "harmless" means of ending the tobacco habit, which cannot be accomplished without the patient's will power. In fact, the expert medical witness testified that a large number of persons whom he had treated with lobeline had returned to the tobacco habit. The fraud order was issued against this scheme on Jan. 30, 1941.

Correspondence

KENNY METHOD OF TREATMENT OF INFANTILE PARALYSIS

To the Editor:—In view of the wide publicity given the Kenny method of treatment of acute poliomyelitis, a copy of the treatment given in the 1906 edition of Osler's *Practice of Medicine* (p. 917), which I enclose, may prove of interest.

The treatment of acute infantile paralysis has a bright and a dark side. In a case of any extent complete recovery cannot be expected; on the other hand, it is remarkable how much improvement may finally take place in a limb which is at first completely flaccid and helpless. The following treatment may be pursued. If seen in the febrile stage, a brisk laxative and a fever mixture may be given. The child should be in bed and the affected limb or limbs wrapped in cotton. As in the great majority of cases the damage is already done when the physician is called and the disease makes no further progress, the application of blisters and other forms of counterirritation to the back is irrational and only cruel to the child.

The general nutrition should be carefully maintained by feeding the child well, and taking it out of doors every day. As soon as the child can bear friction the affected part should be carefully rubbed, at first once a day, subsequently morning and evening. Any intelligent mother can be taught systematically to rub, knead and pinch the muscles, using either the bare hand or, better still, sweet oil or cod liver oil. This is worth all the other measures advised in the disease and should be systematically practiced for months or even, if necessary, a year or more. Electricity has a much more limited use and cannot be compared with massage in maintaining the nutrition of the muscles. The faradic current should be applied to those muscles which respond. The essence of the treatment is in maintaining the nutrition of the muscles, so that in the gradual improvement which takes place in parts, at least, of the affected segments of the cord the motor impulses may have to deal with well nourished, not atrophied, muscle fibers.

If my memory serves me, the immobilization of patients with acute poliomyelitis first came into vogue in this country with the 1916 epidemic.

SIDNEY V. HAAS, M.D., New York.

STETHOSCOPIC RECORDS OF HEART SOUNDS

To the Editor:—In a communication to *THE JOURNAL* of Dec. 20, 1941, Col. J. E. Ash, curator of the Army Medical Museum, Washington, D. C., refers to my stethoscopic records of heart sounds, murmurs and arrhythmias and states that there are "on file at the Army Medical Museum records . . . prepared . . . in 1939."

Quite a number of men in this and other countries have made recordings of heart sounds, and from the standpoint of priority no claim is made. An article in the *American Journal of the Medical Sciences* of November 1941 clearly sets forth this point of view.

The only claims that I make for this series of records are (1) their "high fidelity," (2) completeness, (3) a short explanation of what is to be heard before the illustration, (4) availability to any one at a reasonable price, (5) satisfactory reproduction even with a cheap radio-phonograph in a living room and (6) the fact that they are listened to with one's own stethoscope and that, if directions are followed, one hears the illustrations with the same intensity and quality of sound as was heard with the stethoscope on the patient's chest when the recording was made.

I am sorry that Colonel Ash stated "I understand Dr. Geckeler knew of these records." I had never heard of them.

GEORGE D. GECKELER, M.D., Philadelphia

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO Feb 16 17, 1942 Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, January 24, page 320

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 16 18 Acting Sec, Dr B T Austin, 519 Dexter Ave Montgomery
ARKANSAS * Medical Little Rock, June 4 5 Sec, Dr D L Owens, Harrison Eclectic Little Rock, June 4 5 Sec, Dr Clarence H Young, 1415 Main St, Little Rock

CALIFORNIA Written Los Angeles March 25 Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, March 18 Sec, Dr Charles B Pinkham, 1020 N St, Sacramento

CONNECTICUT * Medical Examination Hartford March 10 11 Endorsement Hartford March 24 Sec to the Board, Dr Creighton Barker, 258 Church St, New Haven Homeopathic Derby, March 10 11 Sec, Dr Joseph H Evans, 1488 Chapel St, New Haven

DELAWARE Dover, July 14 16 Sec, Medical Council of Delaware, Dr Joseph S McDaniel, 229 S State St, Dover

FLORIDA * Jacksonville, June 22 23 Sec, Dr William M Rowlett, Box 786, Tampa

GEORGIA Atlanta June Sec, State Examining Boards, Mr R C Coleman, 111 State Capitol, Atlanta

ILLINOIS Chicago April 7 9 Superintendent of Registration Mr Philip M Harmon, Department of Registration and Education, Springfield

INDIANA Indianapolis, June 16 18 Sec, Board of Registration and Examination Dr J W Bowers 301 State House, Indianapolis

KANSAS Kansas City, June 16 17 Sec, Board of Medical Registration and Examination, Dr J F Hassig 905 N Seventh St, Kansas City

KENTUCKY Louisville June 4 6 Sec, State Board of Health, Dr A T McCormack 620 S Third St, Louisville

MAINE Portland, March 10 11 Sec, Board of Registration of Medicine, Dr Adam P Leighton, 192 State St, Portland

MARYLAND Medical Baltimore, June 16 19 Sec, Dr John T O Mara, 1215 Cathedral St, Baltimore Homeopathic Baltimore, June 16 17 Sec, Dr John A Evans, 612 W 40th St, Baltimore

MASSACHUSETTS Boston March 10 13 Sec, Board of Registration in Medicine, Dr Stephen Rushmore 413 F State House, Boston

MICHIGAN * Ann Arbor and Detroit, June 10 12 Sec Board of Registration in Medicine, Dr J Earl McIntyre, 2024 Hollister Bldg, Lansing

MISSISSIPPI Jackson, June Assistant Sec, State Board of Health, Dr R N Whitfield, Jackson

MONTANA Helena, April 7 8 Sec Dr Otto G Klein First National Bank Bldg, Helena

NEVADA Reciprocity Carson City, February 2 Sec, Dr Frederick M Anderson, 215 N Carson Street, Carson City

NEW HAMPSHIRE Concord, March 12 13 Sec, Dr T P Burroughs, Board of Registration in Medicine, State House, Concord

NEW JERSEY Trenton, June 16 17 Sec, Dr Earl S Hallinger, 28 W State St, Trenton

NEW MEXICO * Santa Fe, April 13 14 Sec, Dr Le Grand Ward 135 Sena Plaza Santa Fe

NORTH CAROLINA Raleigh, June 15 Sec, Dr W D James Hamlet

OHIO Endorsement April 7 Written Columbus, June Sec, Dr H M Platter, 21 W Broad St, Columbus

TEXAS Galveston, March 23 25 Sec Dr T J Crowe, 918 20 Texas Bank Bldg, Dallas

UTAH Salt Lake City June 29 30 Assistant Dir, Department of Registration Mr G V Billings, 324 State Capitol Bldg, Salt Lake City

VERMONT Burlington, Feb 10 12 Sec, Board of Medical Registration Dr F J Lawless, Richford

VIRGINIA Richmond, June 17 20 Sec, Dr J W Preston, 30 1/2 Franklin Rd, Roanoke

WEST VIRGINIA Charleston March 24 Commissioner, Public Health Council Dr C T McClintic, State Capitol, Charleston

WYOMING Cheyenne Feb 23 Sec, Dr M C Keith Capitol Bldg, Cheyenne

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA Tucson March 17 Sec, Mr Franklin E Roach Science Hall, University of Arizona, Tucson

COLORADO Denver, March 10 11 Sec, Dr Esther B Starks 1459 Ogden St, Denver

CONNECTICUT Feb 14 Address State Board of Healing Arts 1945 Yale Station New Haven

DISTRICT OF COLUMBIA Washington April 20 21 Sec Commission on Licensure, Dr George C Ruhland, 6150 E Municipal Bldg, Washington

FLORIDA Gainesville June 8 Sec, Professor J F Conn, John B Stetson University, De Land

MICHIGAN February 13 14 Sec Miss Flora F Dube, East Lansing

NEW MEXICO Albuquerque, Feb 2 Sec, Miss Pia Joergers, State Capitol, Santa Fe

RHODE ISLAND Providence Feb 18 Chief Division of Examiners, Mr Thomas B Casey, 366 State Office Bldg, Providence

SOUTH DAKOTA Vermillion, June 5 6 Sec, Dr G M Evans Yankton

WISCONSIN Madison, April 11 Sec Prof Robert A Bauer 152 W Wisconsin Ave Milwaukee

Ohio Endorsement Report

The Ohio State Medical Board reports 32 physicians licensed to practice medicine by endorsement on October 14 The following schools were represented

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Arkansas School of Medicine	(1940)	Arkansas	
College of Medical Evangelists	(1941)	N B M Ex	
Yale University School of Medicine	(1938)	N B M Ex	
George Washington University School of Medicine	(1932)	Dist Columbia	
(1935) Louisiana			
Loyola University School of Medicine	(1938)	Indiana	
Indiana University School of Medicine	(1941)	Indiana	
University of Louisville School of Medicine	(1939)	Kentucky	
Harvard Medical School	(1931)	Mass	
(1933) N B M Ex, (1938) Maryland			
St Louis University School of Medicine	(1933)	Penn	
(1938) (1940) Missouri			
University of Nebraska College of Medicine	(1943)		
(1937), (1940) Nebraska			
Jefferson Medical College	(1938)	N B M Ex	
Temple University School of Medicine	(1925)		
(1937) (1939) Penna			
University of Pennsylvania School of Medicine	(1923)	Dist Columbia	
(1927) N B M Ex (1931), (1937) Pennsylvania			
University of Pittsburgh School of Medicine	(1932)	Penn	
Meharry Medical College	(1938)	Tennessee	
Medical College of Virginia	(1939)	W Virginia	
Marquette University School of Medicine	(1941)	Wisconsin	
University of Toronto Faculty of Medicine	(1922)	Penn	
Georg August Universität Medizinische Fakultät, Göttingen	(1920)	Nebraska	
National University of Athens School of Medicine	(1907)	Illinois	

Kansas December Report

The Kansas State Board of Medical Registration and Examination reports the written examination for medical licensure held at Topeka, Dec 9-10, 1941 The examination included 10 questions An average of 75 per cent was required to pass Three candidates were examined, all of whom passed One physician was licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners The following schools were represented

School	PASSED	Year Grad	Number Passed
College of Medical Evangelists	(1938)		1
University of Chicago The School of Medicine	(1941)		1
University of Minnesota Medical School	(1941)		1

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Harvard Medical School	(1934)		Missouri

School	LICENSED BY ENDORSEMENT	Year Grad	
Tufts College Medical School		(1926)	

District of Columbia Reciprocity Report

The District of Columbia Commission on Licensure reports 6 physicians licensed to practice medicine by reciprocity on Dec 9, 1941 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Georgetown University School of Medicine	(1937)		Penn
Johns Hopkins University School of Medicine	(1939)		Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1913), (1925)		Maryland
New York University College of Medicine	(1935)		New York
Western Reserve University School of Medicine	(1931)		Ohio

New Mexico Endorsement Report

The New Mexico Board of Medical Examiners reports 8 physicians licensed to practice medicine by endorsement on Oct 13-14, 1941 The following schools were represented

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Colorado School of Medicine	(1937)		Calif
Loyola University School of Medicine	(1941)		Calif
Northwestern University Medical School	(1931)		Ill
(1933) Wisconsin			Ill
University of Illinois College of Medicine			Ill
University of Oklahoma School of Medicine			Oklahoma
Universidad Central de Espana			Spain
Madrid			

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alleged Failure to Administer Tetanus Antitoxin.—Mrs. Ernest Hembree, through the negligent operation of an automobile by Owen Hembree, sustained "severe cuts and bruises about the legs, and broken bones at the point of the cuts." She was taken immediately to the Von Keller Hospital and attended by Dr. Von Keller. Five days latter her husband removed her to another hospital and placed her under the care of Dr. Irby. At that time, according to Dr. Irby, the patient had a high fever, was nervous, had severe headaches and was suffering extreme pain about the injuries on her legs, the symptoms indicating to Dr. Irby the onset of tetanus, but whether or not he administered tetanus antitoxin at that time is not clear. In accordance with his directions the patient that day or the next was taken to a hospital in Oklahoma City and placed under the care of Dr. O'Donoghue, who immediately administered antitetanus serum. The next day the patient complained of stiffness in her neck and tightness around her jaws, and more tetanus antitoxin was administered. Ten days after the accident the patient died of tetanus infection. The husband then brought suit against Owen Hembree and against Dr. Von Keller and the Von Keller Hospital, the case against the physician and the hospital being based on their alleged failure to administer tetanus antitoxin to the patient. Judgment was rendered against Owen Hembree but the trial court directed a verdict in favor of the physician and the hospital, and the plaintiff appealed to the Supreme Court of Oklahoma.

The plaintiff sought to have the doctrine of *res ipsa loquitur* applied to the case, that is, the plaintiff argued that the facts and circumstances surrounding the medical treatment of the patient were wholly within the knowledge of the defendants and the fact of death from tetanus speaks for itself, raising a presumption of negligence on the part of the defendants, thus establishing a *prima facie* case and shifting the burden of proof to them. The Supreme Court of Oklahoma, however, refused to apply the doctrine, quoting with approval the following language in *Evring v. Goode*, 78 F. 442:

Before the plaintiff can recover, she must show by affirmative evidence: First, that defendant was unskillful or negligent; and, second, that his want of skill or care caused injury to the plaintiff. If either element is lacking in her proof, she has presented no case for the consideration of the jury. The naked facts that defendant performed operations upon her eye, and that pain followed, and that subsequently the eye was in such a bad condition that it had to be extracted, established neither the neglect and unskillfulness of the treatment, nor the causal connection between it and the unfortunate event. A physician is not a warrantor of cures. If the maxim, "*Res ipsa loquitur*," were applicable to a case like this, and a failure to cure were held to be evidence, however slight, of negligence on the part of the physician or surgeon, causing the bad result, few would be courageous enough to practice the healing art, for they would have to assume financial liability for nearly all the "ills that flesh is heir to."

The Court accordingly held that the fact that the patient died from tetanus did not raise a presumption of negligence on the part of the defendants thus to establish a *prima facie* case and shift the burden of proof to the defendants.

The plaintiff apparently contended that a failure to administer tetanus antitoxin under the circumstances was improper practice. To prove that the defendant physician and the hospital had not, contrary to their claim that they had, administered tetanus antitoxin, he relied on circumstantial evidence which he alleged established the following facts: Tetanus developed and the patient died as a result thereof in the average period in such cases in which antitoxin is not administered; if antitoxin is administered, tetanus is absolutely prevented in 95 per cent to 100 per cent of cases of similar injury; if tetanus does develop

after antitoxin is administered, the period prior to the development of the disease is doubled or longer and the attack is much milder than when the antitoxin is not administered; the patient had unmistakable symptoms of the disease two or three days prior to her death and numerous injections of antitoxin were administered thereafter. One witness who had accompanied the patient when she was taken to the Von Keller Hospital immediately following the accident testified that the hypodermic which Dr. Von Keller had testified he called for and administered was a hypodermic of morphine and not of antitetanus serum; there was no showing on the patient's chart that antitetanus serum had been administered; there was no charge shown for the antitoxin in the statement of account presented by Dr. Von Keller to the plaintiff, and it is customary to make such charge and customary that some memorandum thereof be given by the nurse to the bookkeeper so that the latter can make the proper charge.

Assuming, said the Supreme Court, though we do not now decide, that the failure to use the antitoxin was improper practice, we look first to the evidence on the issue whether the defendants actually administered antitoxin to the patient. The defendants introduced ample evidence to prove that the serum was administered in proper time, while the plaintiff relies on the records in the hospital, the reaction of the patient and the testimony of the witness who accompanied the patient into the hospital immediately after the accident as circumstantial evidence that the serum was not used. The witness who had accompanied the patient into the hospital immediately following the accident seemed to have owned or to have worked in a drug store and on the basis of such a background she testified that she knew that the hypodermic that she saw prepared for the patient was one of morphine and not of tetanus antitoxin. She stated that she saw no other hypodermic administered to the patient. This witness's testimony, said the Court, is of no probative value. She did not attend the patient constantly after the patient's entry in the hospital and she was in no position to observe all that was done by the physicians and nurses. There was other evidence that the defendant physician had administered morphine. The mere fact that the witness saw the hypodermic prepared and given was no indication that antitetanus serum was not administered also. The Court then went on to consider the testimony of medical witnesses concerning the patient's condition and her reactions as indicative of a lack of tetanus antitoxin. Dr. Irby, after testifying as to the patient's condition when he examined her after her removal from the defendant hospital, testified that antitetanus serum was generally considered as 100 per cent preventive; that he had never heard of a case in which antitetanus serum was administered in which tetanus later developed, and that the incubation period from the date of the injury to the date of the symptoms was six to ten days. On cross examination Dr. Irby said that his statement concerning the period of incubation and percentage of cures was based wholly on his reading and hearing lectures on the subject, that he had never treated a patient with tetanus but had administered the antitoxin as a preventive to 200 or 300 patients. Dr. O'Donoghue stated that the incubation period of tetanus would ordinarily be six to ten days but that the period could be shorter or much longer. According to Dr. O'Donoghue's testimony, antitetanus serum is efficient in the prevention or delay of tetanus but is not an absolute preventive. He knew of 2 patients who, after the administration of tetanus antitoxin, had within the ordinary incubation period developed tetanus and died therefrom. He was of the opinion that while the administration of antitetanus serum would ordinarily increase the incubation period, this would not necessarily be true in every instance. The plaintiff also called as a witness Dr. Baxter, who testified that while the serum was regarded as a preventive he doubted whether it was 100 per cent efficient. The period of incubation, he stated, was "eight to ten days, to six weeks or three months," and the development of tetanus might be an indication that the serum was not given. He qualified the latter statement, how-

ever, by testimony to the general effect that the patient could have received the serum and yet have developed tetanus. In our opinion, said the Court, the evidence on this point which we have discussed is not sufficient to remove the issue from the realm of conjecture and speculation. We find that among the cases in which the antitoxin is duly administered the patient may develop tetanus within from three days to several weeks. Judging from the evidence, physicians and medical instructors are yet uncertain concerning the efficiency of the serum. It is highly efficient and is recommended as a preventive, but it is not infallible. The condition of the patient and the nature of his wounds play a large part in the result. Some react favorably sooner than others. No one could say, without indulging in mere speculation and conjecture, that tetanus would not have occurred in a particular case had the serum been administered at the proper time.

As further indicative of the alleged fact that the defendants had not administered tetanus antitoxin, the plaintiff pointed to the failure of the hospital record or chart of the patient to show that the antitoxin was administered and to the absence of a charge therefor made separately on the statement account presented to the plaintiff by the defendant. Dr. O'Donoghue, testifying for the plaintiff, stated that hospital charts are supposed to contain a list of all medicines and treatments of every kind that are administered to the patient, that if the patient receives an injection of antitetanus serum the hospital records should contain a reference thereto and that the failure to show such injection would be some evidence that none was given. Dr. O'Donoghue, however, further testified that errors often appeared in hospital records and that such omissions occur sometimes when emergency treatment is being administered to a patient and also when the attending physician fails to notify the nurse of the treatment. Dr. Baxter testified that the hospital record of the patient in this case purported to be for the period from 3:30 a. m., when the patient was admitted, to 7 a. m. of the same day. The record showed that the patient was admitted to the x-ray room, where films were made, and was then carried to the operating room. The record indicated that there had been an injection of morphine and atropine made in the x-ray room, but the record itself showed nothing of what transpired in the operating room. The evidence referred to, said the Court, does not establish sufficient facts on which to base a reasonable inference that the antitetanus serum was not administered. The operating room was the proper place in which to administer the serum, yet there was absolutely no record of what transpired there throughout the entire period during which the patient was in that room. In this case it is shown without contradiction that the records were not correctly kept. The Court accordingly concluded that the hospital chart afforded no basis on which it could be concluded that antitetanus serum had not been given.

The action of the trial court in directing a verdict in favor of the hospital and of Dr. Von Keller was accordingly affirmed. —*Hembre v. Von Keller*, 119 P. (2d) 74 (Okla., 1941).

Optometry Practice Acts: Right of a Corporation to Employ Licensed Optometrists.—Since prior to 1915 the defendant, Kindy Optical Company, had pursued its corporate activities in the state of Wisconsin. In doing so it employed two licensed optometrists to whom it furnished certain devices and machines used for testing vision, and their prescriptions for eyeglasses were filled in the defendant's store. In 1915 the Wisconsin legislature enacted a statute regulating the practice of optometry.

The act of 1915 provided that "the furnishing, using or employment of any means, device or machine, designed or calculated to aid any person in the selection or fitting of spectacles or eyeglasses . . . shall constitute the practice of optometry." It also regulated the conduct of "every person, firm or corporation, engaging in the practice of optometry"

and fixed penalties against both employers and employees in case of noncompliance with the law. After the enactment of this law, the defendant continued to pursue its activities without change. In 1938 the Milwaukee Optometric Society petitioned the court for an order to oust the defendant from the practice of optometry. From a judgment enjoining the defendant and its employees from so practicing, the defendant appealed to the Supreme Court of Wisconsin.

The plaintiff contended that a corporation may not practice a profession by employing licensed operators. But, said the Supreme Court, optometry is readily distinguished from a profession in the practice of which diseases of the eye are treated. It is a mechanical art requiring skill and knowledge of the use of instruments designed to measure and record the errors and deviations from the normal found in the human eye. Although certain standards of education are prescribed by the optometry practice act, optometry is not a part of the practice of medicine. The Wisconsin legislature, in the opinion of the Court, dealt with optometry as a skilled calling, not as a profession involving a relation of special confidence between practitioner and patient. The legislature did not attempt to classify optometry so as to prevent the engagement of optometrists by any one to assist in a business in which such a calling is naturally an accompanying factor.

The Court was not impressed with the emphasis that the respondent placed on the fact that the words "unprofessional conduct" were used in the optometry practice act. Phrases work themselves into statutes and literature on a subject because they become convenient in the meeting of situations requiring description, the Court observed, but they cannot be considered of such strength or importance as to carry a meaning contrary to the general import of the statute. A duly registered and licensed optometrist who does not comply with the law, the Court pointed out, would properly enough lose his license, and the phrase in question does not go beyond that. Furthermore, the statute provides for the discipline of an employer when there is a failure to comply with it. It is provided that when an employer violates any of the provisions of the chapter regulating optometry an optometrist cannot remain in his employ and retain his license.

Since the legislature sought to regulate the employment of optometrists, the Court pointed out, it must have intended that there be such employment.

The purpose of the statute to insure competent service to the public, the Court thought, may be fully accomplished although the optometrist rendering the service is an employee of a corporation. The long continued practice of corporations in employing licensed optometrists to test the eyes of customers, concluded the Court, is not a violation of the law regulating the practice of optometry. The judgment of the lower court was reversed and the cause remanded with directions to dismiss the complaint.—*State ex rel. Harris v. Kindy Optical Co.*, 292 N. W. 283 (I'lls., 1940).

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17.

American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norvelle C. LaMar, 149 East 73d St., New York, Secretary.

Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.

Mid South Post Graduate Medical Assembly, Memphis, Tenn., Feb. 10-11. Dr. Arthur F. Cooper, 165 Madison Ave., Memphis, Tenn., Secretary.

Pacific Coast Surgical Association, San Francisco and Del Norte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

11:149-180 (Nov.) 1941

Common Duct Stones and Their Treatment. E. V. Caldwell, Huntsville.—p. 149.

Heart and Upper Abdominal Disease: Their Differential Diagnosis. J. H. Little, Mobile.—p. 155.

Tuberculosis in the Aged. E. M. Norton, Fairfield.—p. 157.

Asphyxia in Newborn. M. V. Adams, Mobile.—p. 160.

Cancer of Female Reproductive Organs, with Reference to 179 Cases Studied in Hillman Tumor Clinic from April 1, 1938 to April 1, 1941. W. N. Jones, Birmingham.—p. 164.

American J. Digestive Diseases, Fort Wayne, Ind.

8:401-442 (Nov.) 1941

Gastric Observations in Achlorhydria. J. B. Carey, M. Wetherby and R. S. Ylvisaker, Minneapolis.—p. 401.

*Study of the Third Bile Fraction. M. E. Rehffuss and T. L. Williams, Philadelphia.—p. 407.

Absorption of Galactose from Gastrointestinal Tract in Deficiency Diseases. A. J. Beams, A. H. Free and P. M. Glenn, Cleveland.—p. 415.

Comparison of Cephalin-Cholesterol Flocculation Test with Various Criteria of Liver Function, with Note on Significance of Hyperexcretion of Hippuric Acid. D. H. Rosenberg and S. Soskin, Chicago.—p. 421.

New Galactose Test for Differentiation of Obstructive from Parenchymatous Jaundice. A. M. Bassett, T. L. Althausen and G. C. Coltrin, San Francisco.—p. 432.

*Toxicity Studies on Stilbestrol. A. H. Aaron, F. Meyers, M. H. Lipsitz and R. S. Hubbard, Buffalo.—p. 437.

Association of Diverticulitis and Carcinoma of Colon. L. K. Stalker, E. T. Rulison and J. D. White, Rochester, N. Y.—p. 440.

Third Bile Fraction.—Rehffuss and Williams made chemical studies of the bile aspirated by duodenal drainage, and they found a definite difference in the physical appearance and the chemical characteristics of the third portion of the bile (liver fraction). The differences are in color, consistency, solubility and quantity of certain elements present. Duodenal drainage apparently does something more than clear the ductus; it removes a variable amount of bile which possesses chemical and possibly toxic properties. Duodenal intubation in selected cases may present another weapon in reducing certain abnormal non-protein fractions from the blood.

Toxicity Studies on Diethylstilbestrol.—Aaron and his co-workers determined the toxicity of diethylstilbestrol by giving 30 patients with chronic arthritis 1 to 3 mg. of the drug. At the onset of treatment all patients received a daily dose of 3 mg. This was reduced to 2 or to 1 mg. in 15 cases when untoward symptoms (nausea and postmenopausal bleeding) developed. Other symptoms were not prominent; occasionally the fact that a patient had had perspiration, headache, palpitation and urinary frequency could be elicited on inquiry but was seldom volunteered. On the contrary, 80 per cent of the patients voluntarily stated that their general feeling of well-being was much improved. None of the results of tests done before and after therapy indicate that a change in hepatic function was produced after five to nine weeks of treatment with diethylstilbestrol. There was an apparent but not significant decrease of bile in the plasma. There was a slight apparent increase in the total cholesterol, the increase being due to a rise in the ester fraction. There was no significant change in the blood count, the urinary content, blood urea and blood dextrose after diethylstilbestrol therapy.

American J. Obstetrics and Gynecology, St. Louis

42:745-924 (Nov.) 1941. Partial Index

Role of Cesarean Section in Treatment of Premature Separation of Normally Implanted Placenta. J. R. Miller, Hartford, Conn.—p. 745.

Pelvic Pain: Follow-Up Study. R. D. Mussey and R. B. Wilson, Rochester, Minn.—p. 759.

*Critical Analysis of Blood Loss in 2,000 Obstetric Cases. L. C. Conn, J. R. Vant and M. M. Cantor, Edmonton, Alta., Canada.—p. 768.

Predicting Length of Labor: I. First Stage. L. A. Calkins, Kansas City, Kan.—p. 802.

*Variable Significance of Heartburn. N. H. Williams, Beverly Hills, Calif.—p. 814.

Hemorrhagic Diathesis of Newborn: Effect of Vitamin K: Prophylaxis and Therapy. L. G. Pray, Washington, D. C.; H. S. McKeown and W. E. Pollard, New York.—p. 836.

Use of Estrogens in Treatment of Dysuria and Incontinence in Postmenopausal Women. U. J. Salmon, R. I. Walter and S. H. Geist, New York.—p. 845.

Gynecologic Surgery Under Local Anesthesia. E. L. Griffin and R. C. Benson, New York.—p. 862.

Twin Pregnancies in Service of Chicago Lying-in Hospital. Edith L. Potter and A. B. Crunden, Chicago.—p. 870.

Clinicopathologic Study from Thirty-Two Cases of Chorionepithelioma. H. Acosta-Sison and N. Espanola, Manila, Philippine Islands.—p. 878.

Comparative Study of Pregnancy in White and Colored Races. W. Z. Bradford and W. B. Bradford, Charlotte, N. C.—p. 884.

Plasma in Obstetrics, with Simple Method for Its Production. L. H. Tisdall, Brooklyn.—p. 889.

Hydatidiform Mole Followed by Chorionepithelioma. E. F. McLaughlin, Philadelphia.—p. 904.

Stethogram and Recorded Disk of Fetal Heart Sounds in Twin Pregnancy. A. L. Smith, Lincoln, Neb.—p. 908.

Blood Loss in Obstetric Cases.—Conn and his co-workers determined the average blood loss of 2,000 mothers having vaginal deliveries. Eight hundred of the women were primigravidas, and 1,200 were multigravidas. The average blood loss for the primiparas was 388 cc., and for the multiparas it was 280 cc. The increase in the average blood loss corresponded to the increase in the mother's weight. A similar increase followed the delivery of a large baby or of twins. Furthermore, with an increase in the duration of labor and in the weight of the placenta the blood loss was usually increased. Of the 2,000 women, 66 per cent were delivered spontaneously with an average blood loss of 278 cc.; with low forceps delivery the average loss was 404 cc., and with midforceps delivery the average loss was further increased. Of the 800 primiparas, 170 had a blood loss of 600 cc. or more, as did 144 of the 1,200 multiparas. Close analysis reveals that the patients with a blood loss in excess of 600 cc. bore practically the same relation to the various factors which played a part in increasing the blood loss in the group as a whole. Of the 314 patients, the 126 with perineal wounds lost between 600 and 700 cc. of blood. This suggests that incision may not always be justified. In 60 patients, instrumental delivery was judged to be the cause of the increased loss of blood, in 56 there seemed to be no obvious reason for the excessive blood loss, in 41 the cause appeared to be uterine atony and in 32 sedatives played a part.

Significance of Heartburn.—Williams made a roentgen and fluoroscopic study of pregnant women with and without heartburn. As damage through repeated roentgen exposures was possible, observations were somewhat curtailed. Initially a 200 cc. barium sulfate meal was given and its propulsion followed through the esophagus, and its behavior in the stomach was watched. Evidence of hiatus hernia, esophageal dilatation, regurgitation and reverse peristalsis were observed whenever the patient suffered from heartburn. Observations left no doubt that in patients without heartburn the stomach suffered encroachment by the pregnancy. There were no visible pathologic alterations in 7 women with heartburn, in 3 there was moderate dilatation of the lower third of the esophagus, in 1 the passage of barium was delayed at the cardia because of slight regurgitation and in 1 a hiatus hernia, with a dilatation above it, was observed. These revelations imply that heartburn rarely rests on an anatomic basis but that its origin and development lie within the domain of pathologic physiology. Granting that heartburn is essentially a neuromuscular phenomenon it seemed to the author that prostigmine may be a rational therapeutic means of relieving the symptom. Accordingly, 16 patients with severe heartburn were given an injection of 1 cc. of prostig-

mine, 1:2,000, and after a single dose 1 patient was not benefited and 14 were made comfortable or were entirely relieved within twenty-four hours. In about half of them the distress gradually recurred in seven to ten days. A second dose proved as effective as the first. Repeated injections kept the patients free of the symptom with no untoward results. Dietary and other hygienic indiscretion may provoke heartburn. Sometimes alkalis afford relief, implying gastric hyperacidity. Chemical analysis, however, showed gastric hypoacidity more often, occasionally complete anacidity. Consequently hydrochloric acid has been effective in some instances. Whatever the benefits of alkali or acid therapy, not the composition of the gastric juice but temporary impairment of the neuromuscular mechanism, which controls the transportation of the gastric contents, is at fault.

American Journal of Surgery, New York

54:339-586 (Nov.) 1941

- Immediate Complications of Operations for Acquired Cataract: Certain Complications Affecting Anterior and Posterior Segments of Eyeball C Berens and D. Bogart, New York.—p. 346.
- *Prevention of Discomfort and Disability in Treatment of Varicose Veins I. A. Brunstein, New York.—p. 362.
- Congenital Discoid Meniscus: Cause of Internal Derangement of Knee E F Cave and O S. Staples, Boston.—p. 371.
- Chronic Sclerosing Osteomyelitis: Garre. D. R. Jensen, New York.—p. 377.
- General Considerations of Fistula in Ano Role of Foreign Bodies as Causative Factors A. M. Buda, Brooklyn.—p. 384.
- Right Lateral Rectus Incision in Acute Appendicitis C G. Bain, Chehalis, Wash.—p. 388.
- Extracranial Fibromyomas G D. Scott and I H. Scott, Sullivan, Ind.—p. 391.
- Adenoma of Stomach Heterotopia of Brunner's Glands Producing Pyloric Obstruction Case Report L W. Crossman and J. H. Kidder, New York.—p. 395.
- Obstetric Analgesia in Private Patients B J Hanley, Los Angeles.—p. 403.
- *Methylene Blue as Indicator for Oral Administration of Food to Surgical Patient B I Golden and J. E. Martin Jr., Elkins, W. Va.—p. 407.
- Tendon Injuries: Study of 116 Cases D H. Hooker and C R. Lam, Detroit.—p. 412.
- Leukocyte Exhaustion in Intestinal Obstruction F I Harris, San Francisco, and J S. Feldheim, Fort Lewis, Wash.—p. 417.
- Malignant Argentaffine Tumors of Appendix. E O Latimer, Chicago.—p. 424.
- Statistical Review of Carcinoma of Stomach G M. Saypol and J W Hinton, New York.—p. 431.
- *Method to Prevent Fresh Costal Cartilage Grafts from Warping G B New and J B Erich, Rochester, Minn.—p. 435.
- Surgical Technic for Removal of Solitary Destructive Neoplastic Lesions of Cranium J L Poppen, Boston.—p. 439.
- Suppression of Lactation by Stilbestrol O H Bloom, Brooklyn.—p. 443.

Varicose Veins.—Brunstein believes that the disturbing sequels (pain, discomfort and disability) often encountered in the treatment of varicose veins may be prevented by the empty vein technic, which will really keep the patient ambulatory and able to pursue his usual activities. Sclerosis by injection into empty veins will cause blocking of the varices by fusion of the opposing surfaces of the vessel, and direct contact of the sclerosing solution with the intima irritates the endothelium; the irritation is followed by an ample production of fibroblasts. These are instrumental in firmly binding the opposing surfaces of the vessel. Furthermore, the results of injections into empty veins are cosmetically more gratifying, and discoloration is greatly reduced. The objection to the technic is the possibility of the sclerosing solution's escaping through communicating veins into the deep venous circulation, but this cannot be substantiated. The technical difficulty of injecting collapsed varicosities is the only real disadvantage of the method. Adequate compression is necessary to maintain large varicosities in a collapsed and well supported state after injection.

Methylene Blue.—Golden and Martin observed that the postoperative morbidity was reduced if patients were given food as soon as nausea and vomiting stopped. However, as cessation of vomiting and nausea need not always mean that the intestinal tract is absorbing and the kidneys are functioning they sought a physiologic basis for intestinal absorption and renal function. A dye seemed to be indicated, and they tried methylene blue. The dye, 0.065 Gm in a capsule, was given by mouth with as

much water as possible six to eighteen hours after operation. The patient was requested to void, or he was catheterized prior to its administration. During the next three hours, small amounts of water were given repeatedly, after which the patient was encouraged to void or he was catheterized at the end of five hours. If the urine obtained was greenish blue, it was assumed that the intestine was able to absorb and that the kidneys could secrete, and feeding by mouth was started. Failure to obtain a secretion of the dye in the urine should invariably suggest that the patient is sick and a faint color that oral feeding should be proceeded with slowly. Since the authors have used methylene blue as a physiologic test of the patient's ability to use food they have observed a definite reduction in wound infection, postoperative nausea and vomiting and they practically no longer have need for the Wangenstein appliance.

Preventing Cartilage Grafts from Warping.—New and Erich point out that finished grafts of fresh costal cartilage will not warp or become distorted if before use the cartilage is placed in a test tube containing water or aqueous sodium ethyl mercurithiosalicylate (merthiolate) and the tube is then placed upright in a beaker containing boiling water. Although the solution in the test tube will in time become hot it will not boil and cause multiple ruptures in the cartilaginous matrix. The solution in the test tube will remain 3 or 4 C. below the boiling point of water for the ten minutes that the water in the beaker is allowed to boil. Cartilage which has been subjected to such a heating process will undergo a certain amount of warping while it is cooling; therefore it is to be cut to the desired shape after it has cooled. Furthermore, if the end of a cartilaginous implant is trimmed to a feather edge, the extremely thin margin may be remedied by cutting away that portion of the fine edge that is bent. When the cartilage is removed from the test tube, it is immersed for fifteen minutes in cold sterile physiologic solution of sodium chloride. With a few exceptions, the defect of the face can be fully prepared for reception of the implant by the time the treated cartilage has been made available for proper shaping. None of the cartilage implants that the authors have made by their method has undergone any distortion post-operatively.

American Review of Tuberculosis, New York

44:509-636 (Nov.) 1941

- Occupation, Tuberculosis and Compensation Laws. L. Braddy, New York.—p. 509.
- Toll of Tuberculosis in Infected Part of Population J. Hollo, New York.—p. 520.
- *Tuberculosis Survey. Observations in Schools of Rhode Island. W. P. Shields, Providence, R. I.—p. 532.
- Voluntary Discharges from a Tuberculosis Sanatorium. E K. Johnson, Newark, Ohio.—p. 540.
- Weather and Resistance in Pulmonary Tuberculosis Part II W. F. Petersen, J. S. Howe and M E. Milliken, Chicago.—p. 548.
- Decompression of Tuberculous Cavities: Skin Flap Operation for Residual Cavities Following Thoracoplasty. S J Shipman, W. I. Rogers and A. C. Daniels, San Francisco.—p. 588.
- *Vitamin C Treatment of Mucous Membrane Tuberculosis. E. Bogen, L. Hawkins and E S. Bennett, Olive View, Calif.—p. 596.
- Effect of Arspenamine on Tuberculosis in Syphilitic Animals W. McDermott, B. Webster and D. Macrae, New York.—p. 604.
- Permeability of Fibrous Tissue to Tubercle Bacilli D. Yegian and H. Halley Jr.—p. 619.

Tuberculosis in Schools.—Shields employed the Mantoux technic to find the positive reactors to the purified protein derivative of tuberculin among 4,320 Rhode Island students (14 less than 5 years of age; 264, 5 to 9; 909, 10 to 14; 2,900, 15 to 19, and 161 more than 20). The percentage of positive reactors for the whole group was 47.5, and for the different ages it was respectively 21.4, 22.3, 45.2, 50 and 68.9. Roentgenograms of the chest were made of all students giving a positive reaction. Students with roentgen evidence of the disease were notified to visit their family physician, who simultaneously received a detailed report of the observations. No consistent relation was observed between the percentage of positive reactors to tuberculin and the death rate from tuberculosis (46.4 per hundred thousand population). This experience casts some doubt on the often quoted dictum of Myers "that the tuberculosis

problem in a community is measured by the relative frequency of the tuberculin reactors." Among the 1,850 students who had roentgenograms of the chest made, 3 had the adult type of tuberculosis and roentgen evidence of a healed childhood lesion was found in 799. A healed primary lesion was diagnosed when calcified foci were observed in the pulmonary field.

Vitamin C for Mucous Membrane Tuberculosis.—Bogen and his associates determined the effect of vitamin C on the lesions of the mucous membranes of 196 patients with tuberculosis. The patients were divided, in rotation, into seven groups; the sanatorium diet of three groups was supplemented by vitamin C and of three by other dietary supplements, and one group was not given any special medication but was kept as a sort of psychologic control or check on the mental stimulation and the apparent improvement which so often result after any new treatment. Subjectively, as a result of treatment, the general condition of the patients receiving vitamin C was better than that of the other four groups of patients, although the status of the pulmonary condition did not support this impression. Despite the absence of significant objective improvement in the general condition, bronchoscopic or proctoscopic examination and clinical observation revealed improvement in the lesions of the mucous membranes in nearly 90 per cent of the patients receiving additional vitamin C, as compared to less than half of those in the other four groups. A similar beneficial effect was observed in patients with laryngeal tuberculosis; three fourths of those receiving vitamin C showed improvement, as compared to only half of those not receiving such treatment.

Archives of Otolaryngology, Chicago

34:865-1082 (Nov.) 1941

- Granulomatous Ulcer of Nose and Face of Unknown Cause, Usually Progressive, Gangrenous and Fatal. W. B. Hoover, Boston.—p. 865.
Fenestra Nov-Ovalis: New Oval Window for Improvement of Hearing in Cases of Otosclerosis. J. Lempert, New York.—p. 880.
*Roentgen Therapy for Bronchiectasis. R. C. Carpenter, Marshalltown, Iowa; H. D. Kerr, Iowa City, and J. S. McMurray, Washington, Pa.—p. 913.
Otorhinogenic Hydrocephalus. E. Reeves, Passaic, N. J.—p. 920.
Injuries to Nose in Children: Diagnosis and Treatment. S. Salinger, Chicago.—p. 936.
Cerebellar Abscess. B. H. Shuster, Philadelphia.—p. 952.
Etiology of Bronchiectasis. H. P. Schenck, Philadelphia.—p. 958.
Bronchiectasis: Medical Aspects. S. S. Leopold, Philadelphia.—p. 966.
Roentgenologic Considerations of Bronchiectasis. E. P. Pendergrass, Philadelphia.—p. 974.
Surgical Treatment of Bronchiectasis. J. Johnson, Philadelphia.—p. 991.
Bronchoscopic Aspects of Bronchiectasis. G. Tucker, Philadelphia.—p. 999.
Tumors of Nose and Throat. G. B. New and J. B. Erick, Rochester, Minn.—p. 1039.

Roentgen Therapy for Bronchiectasis.—Carpenter and his associates used roentgen irradiation for the treatment of 38 patients with chronic bronchiectasis which had been observed and treated for months or years but had remained practically stationary. The physical factors of the therapy were 200 kilovolts, a distance of 50 cm. and filtration through 0.5 mm. of copper; the size of the field was 10 by 10 cm. for children or 10 by 15 cm. for adults; the average total dose for each anterior, lateral and posterior field varied from 1,200 to 1,700 roentgens, and the average daily dose varied from 100 to 200 roentgens, given through two fields. Treatment was usually completed in three weeks. No adverse reactions other than a few gastrointestinal upsets (attributable to "irradiation sickness") and occasional slight secondary anemia were encountered. During treatment and for several months after its completion cough and expectoration were usually increased, after which there was a gradual cessation of symptoms in the patients who responded to the therapy. The patients who experienced no improvement noticed that the sputum was less viscid and easier to cough up. Of the 38 patients 5 were decidedly improved, 8 were moderately improved, 5 were slightly improved and 20 were not improved; 5 patients died. The most definite improvement was observed in patients with minimal and moderate involvement, that is, about 50 per cent of the patients with minimal or moderate involvement experienced some improvement.

Archives of Physical Therapy, Chicago

22:577-640 (Oct.) 1941

- Physical Therapy in Education and Research. W. T. Sanger, Richmond, Va.—p. 581.
Salvaging the Lame Back Patient. F. R. Ober, Boston.—p. 583.
Correlation of Physical Therapy and Occupational Therapy in Cerebral Palsy. W. M. Phelps, Baltimore.—p. 587.
Physical Therapy in Wartime Britain. W. Beaumont, London, England.—p. 591.
Application of Climatotherapy in General Medicine. C. I. Singer, Long Beach, N. Y.—p. 595.
Some Roentgen Ray Findings Which May Be Responsible for Low Back Pain. B. H. Nichols, Cleveland.—p. 600.
*Periarthritis of Shoulder: Comparison of Results Obtained by Physical Therapy and by Roentgen Therapy. W. M. Solomon and J. L. Morton, Cleveland.—p. 607.
Electrical Accidents: Shock, Burns and Glare Injuries to Eyes. H. E. Fisher, Chicago.—p. 611.

Periarthritis of Shoulder.—Solomon and Morton compare the results in 25 consecutive patients with periarthritis of the shoulder treated with diathermy with the results obtained in 25 similar patients given roentgen therapy. With diathermy 60 per cent of the patients were relieved of all symptoms or had but a minimal amount of tenderness or pain in the region of the shoulder. The average number of diathermy treatments was nine, representing approximately three weeks of therapy. Of the patients receiving roentgen irradiation 60 per cent also were cured or definitely improved. All except 3 patients received the full course of therapy, six treatments in two weeks. The data on these patients, as the data on the patients receiving diathermy, show that the duration of the disorder, its mode of onset or the presence or absence of calcium did not materially influence the results.

Connecticut State Medical Journal, Hartford

5:797-870 (Nov.) 1941

- Chemotherapy in Pelvic Inflammatory Disease. W. E. Studdiford, New York.—p. 799.
Function of Bile, with Special Reference to Therapeutic Use of Bile Salts. C. H. Greene, New York.—p. 804.
Belladonna Root Treatment of Chronic Encephalitis. L. H. Gold, Hartford.—p. 811.
*Progress Report on Experiment in Control of Cancer of Uterus. Catharine Macfarlane, Philadelphia.—p. 814.
Physical Status of American Young Men. G. St. J. Perrott, Washington, D. C.—p. 817.
Carcinoma of Duodenum. N. L. Cressy, Meriden.—p. 818.
Background of Public Health in Connecticut. I. V. Hiscock, New Haven.—p. 821.

Control of Cancer of Uterus.—With the conclusion in mind that the best way to discover cancer of the uterus at its beginning is by periodic examination Macfarlane sought and obtained the aid of 1,000 white women aged 30 or more. To date these volunteers have been examined at least three times, some as many as six times. Among the first thousand examinations, one disclosed a patient with an early cancer of the body of the uterus, and three revealed patients with an early cancer of the cervix. Today, after surgical intervention and radium and roentgen therapy, the 4 women are well. No other cancers of the uterus have been found. In addition to the 4 with an early cancer there were 516 women who had benign lesions; 257 had precancerous lesions of the cervix (leukoplakic areas and cervicitis with erosion). One hundred and nineteen of the women with the potentially serious lesions have been treated adequately, and the menace of cancer has been removed for them.

Florida Medical Association Journal, Jacksonville

28:197-252 (Nov.) 1941

- Application of Synthetic Sex Hormones, Male and Female, in Their Newer Forms: Preliminary Report of Therapy with Stilbestrol and Methyl Testosterone. C. P. Lamar, Miami.—p. 211.
Preventriculosis: Report of Case. C. J. Heinberg, Pensacola.—p. 222.
Experiences of a Railway Surgeon and Country Doctor. Z. Brantley, Grandin.—p. 226.
*Use of Pitressin in Preoperative and Postoperative Treatment. L. A. Wylie, St. Petersburg.—p. 229.

Preoperative and Postoperative Use of Pitressin.—Wylie used pitressin for the preoperative and postoperative treatment of 350 patients with abdominal disorders requiring surgical intervention. The administration of 0.5 or 1 cc. of pitressin half an hour before operation makes the approach to

and exposure of the abdominal field much easier, as less hemorrhage occurs. It has been observed that the intravenous injection of 50 cc. of concentrated dextrose solution before the patient leaves the operating room augments the effects of pitressin and aids in maintaining fluid balance. The postoperative administration of 10 depressor units of pitressin is started within four hours and continued every six hours until four doses have been administered. This procedure assures the average patient freedom from discomfort due to gas. Much less morphine or pantopon (the hydrochlorides of the alkaloids of opium, principally morphine) is needed to relieve pain and restlessness. The main problem in assuring a comfortable convalescence is the control of dehydration, ileus, shock and vomiting. When pitressin is used postoperatively the degree of dehydration seems to be lessened and ileus is decreased. Postoperative shock is best treated by the accepted preventive methods. By the total postoperative abstinence from fluids other than small quantities of warm tea, bouillon or an antacid in warm water, vomiting and excessive thirst are lessened and with the administration of pitressin and dextrose solution these annoying symptoms are almost entirely absent.

Illinois Medical Journal, Chicago

80:353-436 (Nov.) 1941

- Medical Department of Our Army C. G. Hutter, Chicago—p. 360.
Common Sense in Practice of Medicine W. O. Thompson, Chicago—p. 366.
Surgery of the Aged E. L. Strohl, Chicago—p. 369.
Ophthalmology Under Field Conditions R. I. Prutkin, Chicago—p. 373.
Diabetes from Surgical Standpoint G. S. Van Alstyne, Chicago—p. 376.
Causes and Treatment of Spontaneous Abortion R. A. Reis, Chicago—p. 380.
Nonindustrial Eye Injuries H. J. Smith and H. V. Wadsworth, Chicago—p. 383.
Malaria Treatment of Neurosyphilis and Malaria Among Drug Addicts as Public Health Problems G. H. Gowen, Ann Arbor, Mich—p. 388.
Observations on Pneumonia of Infants at Cook County Hospital, Season of 1941 J. Greengard, W. B. Raycraft and L. S. Frank, Chicago—p. 391.
*Acute Suppurative Epididymitis Caused by Pneumococcus N. J. Heckel and T. W. Preston, Chicago—p. 397.
Diagnosis of Pulmonary Heart Disease (Cor Pulmonale) W. R. Tobin, Chicago—p. 400.
Diagnosis and Treatment of Diaphragmatic Hernia in Children J. M. Dorsey, Chicago—p. 402.
*Postmenopausal Bleeding C. J. Geiger, Chicago—p. 406.
Tuberculosis: Its Two Phases of Development C. A. Stewart, Minneapolis—p. 410.
Problem of Chronic Alcoholism in State Hospitals R. G. Novick, Manteno—p. 414.
Electrocardiographic Changes Observed During Artificially Produced Convulsions A. A. Lieberman and E. Liebert, Elgin—p. 420.

Epididymitis Caused by Pneumococcus.—Heckel and Preston report a case of epididymitis caused by the type X pneumococcus in which the organism which gave rise to the acute inflammatory process was apparently introduced into the urinary tract by way of the urethra during the passage of a sound. The duration of the chronic process was about twenty years. Acute inflammation immediately followed the passage of the sound. There was no history of a primary infection of the lungs or the respiratory tract. The treatment of the condition, in contrast to treatment for conditions due to a nonspecific organism or the gonococcus, is incision and drainage. For the authors' patient, because an extensive lesion contained many abscess, complete removal of the inflammatory mass, which contained the testicle, was the only procedure possible. In 5 of the 7 cases of epididymitis or epididymo-orchitis caused by the pneumococcus collected from the literature there was antecedent pneumonia or another acute primary infection external to the urinary tract.

Postmenopausal Bleeding.—Geiger states that, of 395 patients with postmenopausal bleeding admitted to the gynecologic tumor clinic of the Cook County Hospital between January 1933 and July 1940, 265 (67 per cent) had carcinoma of the cervix, 34 had carcinoma of the body of the uterus, 10 had malignant ovarian lesions, 12 had other malignant lesions and 74 had benign lesions. The total incidence of malignant lesions was 81.3 per cent. More than one third of the benign lesions were cervical polyps. In order to establish a diagnosis 345 women were subjected to biopsy, 50 to a dilation and curettage and 13 to laparotomy.

Journal Industrial Hygiene & Toxicology, Baltimore

23:415-458 (Nov.) 1941

- Experimental Chronic Carbon Disulfide Poisoning in Dogs: Clinical, Biochemical and Pathologic Study. F. H. Lewey, B. J. Alpers, S. Bellet, D. L. Drabkin, W. E. Ehrlich, J. H. Frank, A. J. Creskoff, L. Jonas, R. McDonald, E. Montgomery and J. G. Reinhold, Philadelphia—p. 415.
Study of Hazards Involved in Spray Painting with Gasoline as Diluent. J. H. Sterner, Rochester, N. Y.—p. 437.
Investigations on Possible Carcinogenic Effect of Anthracene and Chrysene and Some of Their Compounds. II. Effect of Subcutaneous Injection in Rats J. A. Pollia, Los Angeles—p. 449.

Journal-Lancet, Minneapolis

61:435-470 (Nov.) 1941

- Selenium Poisoning in the Human. R. E. Lemley and M. P. Merryman, Rapid City, S. D.—p. 435.
Some Pathologic Cysts, with Special Reference to Nasopharynx J. A. Nelson, Sioux Falls, S. D.—p. 439.
Medical Profession's Responsibility in Control of Cancer. J. C. Ohlmacher, Vermillion, S. D.—p. 441.
Pathologic Significance of Discharge from Nonlactating Breast T. O. Young, Duluth, Minn., and E. I. Parson, Askov, Minn.—p. 446.
Corn Dermatitis R. B. Tudor, Hibbing, Minn.—p. 450.
Treatment of Vitamin A Deficiency with Intramuscular Injections of Burbot Liver Oil E. A. Strakosch, Minneapolis—p. 453.
Appendicitis—Hazard of Youth Dorothea H. Scoville, New London, Conn.—p. 457.

Journal of Nat. Cancer Inst., Washington, D. C.

2:1-98 (Aug.) 1941. Partial Index

- Influence of Hybridization on Natural Resistance of Mice to Progressive Growth of Sarcoma 37 H. B. Andervont, Washington, D. C.—p. 1.
Relative Activity of Xanthine Dehydrogenase, Catalase and Amylase in Normal and Cancerous Hepatic Tissues of Rat. J. P. Greenstein, W. V. Jenrette and J. White, Washington, D. C.—p. 17.
Morphologic Changes Associated with Pantothenic Acid Deficiency in Mouse. S. W. Lippincott, Montreal, Canada, and H. P. Morris, Washington, D. C.—p. 39.
Toxic and Carcinogenic Effects of Stilbestrol in Strain C3H Male Mice. M. B. Shumkin and H. G. Grady, Bethesda, Md.—p. 55.
Lack of Carcinogenic Potency of Desoxycorticosterone in Mice. M. B. Shumkin and H. G. Grady, Bethesda, Md.—p. 61.
Induction of Testicular Tumors and Other Effects of Stilbestrol Cholesterol Pellets in Strain C Mice. M. B. Shumkin, H. G. Grady, Bethesda, Md., and H. B. Andervont, Washington, D. C.—p. 65.
Problem of Gastric Cancer W. A. Cooper, New York—p. 85.
Effect of Dietary Cystine on Reaction of Dilute Brown Mice to Methylcholanthrene (Preliminary Report). J. White, Washington, D. C., and G. B. Mider, Bethesda, Md.—p. 95.

Journal of Urology, Baltimore

46:807-1050 (Nov.) 1941. Partial Index

- Arterial Hypertension I. H. Page, Indianapolis—p. 807.
*Disease of Right Kidney as Cause of Obstructive Jaundice. Anatomic Explanation B. Derrah, Flushing, N. Y., and D. R. Krufman, Jackson Heights, N. Y.—p. 853.
*Aniline (Triphenylmethane) Dyes in Treatment of Hunner Ulcer. Preliminary Report E. Davis, Omaha—p. 899.
*Treatment of Hunner's Ulcer with Deep X-Ray Therapy H. A. R. Kreutzmann, San Francisco—p. 907.
Bladder Injury Subsequent to Irradiation of Uterus A. L. Dein and D. P. Slaughter, New York—p. 917.
Pharmacology of Micturition Effect of Drugs on Bladder and Urethra with Autonomic Supply Intact I. C. Winter, Oklahoma City—p. 952.
Differential Diagnosis of Carcinoma of Prostate with Skeletal Metastases and Osteitis Deformans (Paget's Disease of Bone). J. K. deVries, New York—p. 981.
Studies on Prostatic Cancer III Effects of Fester, of Desoxycorticosterone and of Estrogen on Clinical Patients with Metastatic Carcinoma of Prostate C. Huggins, W. W. Scott and C. V. Hodges, Chicago—p. 997.
Experiences in Treatment of Carcinoma of Prostate with Irradiation of Testes A. D. Munger, Lincoln, Neb.—p. 1007.
Mechanism of Urinary Tract Obstruction in Sulfathiazole Therapy: Identification of Crystals in Tissue by Polarized Light E. L. Prien, E. G. Crabtree and C. Frondel, Boston—p. 1020.
Sulfathiazole and Its Sodium Salt: Effectiveness and Limitations in Clinical Practice. G. Carroll, L. Kappel and H. Allen, St. Louis—p. 1033.
Sulfathiazole in Treatment of 200 Cases of Male Gonorrhea R. Deakin and J. F. Patton, St. Louis—p. 1043.

Disease of Right Kidney and Jaundice.—Derrah and Kaufman report 2 cases of obstructive jaundice in which recovery followed the surgical removal of calculi from the right kidney. At first there was an immediate postoperative diminution of the jaundice, and later the jaundice disappeared completely. An attempt is made to explain the pathogenesis of obstructive jaundice and disease of the right kidney on the close

anatomic relationship of the duodenum, the bile ducts and the right kidney. In view of this close relationship it is rather unusual that jaundice develops in so few patients with disease of the right kidney. This may be explained by the fact that the position of the kidneys is variable and that the kidneys present some degree of mobility during respiratory movements and during changes in the posture of the body. These factors reduce the possibility of continuous pressure on the duodenum from a distended renal pelvis. In the authors' 2 patients the long history of calculous disease suggests that sufficient perinephritis was present to fix the kidney in one position.

Aniline Dyes for Hunner Ulcer.—Davis used aniline dyes as instillations or irrigations for the treatment of 16 patients with Hunner ulcer. Treatment was immediately followed by a painful reaction or a period of increased distress of the bladder. The reaction was followed by definite and unmistakable improvement for two to fifteen months in 15 of the 16 patients. However, the improvement was in turn followed by a relapse. Only 3 patients have remained well for ten, five and five months, respectively. The condition of the sixteenth patient became distinctly worse, as evidenced by a prolonged period of increased distress and then a return to the status quo without an intervening period of improvement. The author makes no claims as to the value or the efficacy of dyes of the triphenylmethane group in the treatment of submucous ulcer. However, he points out, instillation of or irrigation with the dye is a less formidable procedure than fulguration, and probably when the identity and the concentration of the dye best suited are known better the method might serve a useful purpose.

Treatment of Hunner Ulcer.—According to Kreutzmann, high voltage roentgen therapy of the Hunner ulcers of 5 women and 1 man produced complete relief in 3 of the women for seven, eleven and twelve months, respectively. The dose varied from 1,200 to 4,200 roentgens. In no case was the relief permanent. The disadvantages of this method of treatment are the limitation of dosage and the production of the menopause in women.

Military Surgeon, Washington, D. C.

89:737-848 (Nov.) 1941

- Problems of Allergy in War Time. W. T. Vaughan.—p. 737.
Survey of Tetanus in Soil of Key West, Fla. A. G. Foraker, with technical assistance of J. F. Jaycocks.—p. 747.
Fractures of Malar and Zygoma. F. R. Corbin.—p. 750.
Diagnosis and Treatment of Regional Enteritis. R. B. Phillips.—p. 755.
Osteomyelitis Arising from Periodontium. R. H. Ivy and T. J. Cook.—p. 761.
Osteomyelitis of Mandible and Maxillas. J. J. Stetzer Jr.—p. 769.
*Choosing Method for Mass X-Raying of Service Men. N. Mercer.—p. 772.
Problems of Military Surgery. G. C. Shivers.—p. 776.
Painful Feet. C. J. Frankel and R. V. Funsten.—p. 786.
Report on 4,188 National Guard Induction Examinations. J. Haas.—p. 790.
Radiographic Evaluation of Healing Fractures. J. L. Dixon.—p. 796.
Army Experience with "Ids." J. W. H. Rouse and W. A. Hadly.—p. 798.
Value of Pseudisochromatic Color Vision Test in Original Applicants for Military Flying. M. S. White.—p. 801.
Influenza Epidemic of 1918-1919 in San Francisco. A. K. Hrenoff.—p. 805.
Lives of the Surgeons General of United States Navy. L. H. Roddis.—p. 811.

Mass Roentgenography of Service Men.—On the basis of the roentgenograms of all selectees and national guardsmen in two army corps areas Mercer estimates that there are between 5,000 and 15,000 persons with pulmonary tuberculosis among the million men who are now in the service but who have not had roentgenograms of the chest made. To prevent the spread of tuberculosis in the Army, Navy and Marine Corps the 5,000 to 15,000 persons should be found and weeded out before further infection occurs. In discussing the best method for mass roentgenography the author considers only the three rapid low cost methods: the photofluorographic methods using the 35 mm. or the 4 by 5 inch (10 by 12 cm.) film and the roentgen method using the 14 by 17 inch (35 by 43 cm.) paper film. Per exposure the 35 mm. film is said to cost about 1 cent, the 4 by 5 inch film about 5 cents and the 14 by 17 inch paper film 25 cents. If it costs \$10,000 to exclude a man with tuberculosis from the service the most expensive method appears to be the most economical; for example, there is a

difference of \$2,400 in the cost of the roentgenograms of 10,000 men made by the most expensive and by the least expensive method. If the use of the more expensive film resulted in the finding and rejecting from the service of only 1 service man more per 10,000 men than the use of the least expensive film would permit it would save the government \$7,600. From published studies it appears that out of 100 cases of minimal tuberculosis revealed through the use of the 14 by 17 inch roentgenogram at least 1½ cases would be missed through use of the 4 by 5 inch miniature photo and at least 5 through use of the 35 mm. microphoto.

Nebraska State Medical Journal, Lincoln

26:379-414 (Nov.) 1941

- Modern Methods in Treatment of Acute Meningitis. R. P. Mackay, Chicago.—p. 379.
Mode of Sulfonamide Administration: Preliminary Report. J. A. Henske and J. L. Gedgoud, Omaha.—p. 387.
Abnormal Position of Liver, Eventration of Diaphragm, Nonrotation of Stomach and Intestinal Obstruction: Report of Case. V. M. Winkle, Norfolk.—p. 389.
Treatment of Acute Otitis Media. L. H. Heine, Fremont.—p. 395.
Chronic Purulent Otitis Media. J. J. Hompes, Lincoln.—p. 398.
Newer Anesthetic Agents. S. D. Miller, Lincoln.—p. 402.

New England Journal of Medicine, Boston

225:675-708 (Oct. 30) 1941

- Liver Dosage in Pernicious Anemia: Failure of Quantitative Storage of Hemopoietic Principle. W. B. Seymour, R. W. Heinle and F. R. Miller, Cleveland.—p. 675.
Controlled Administration of Fluid in Surgery. J. Scudder and E. Self, New York.—p. 679.
Primary Carcinoma of Urethra in Male: Report of Case. M. O. Zucker and G. J. Weinstein, New York.—p. 682.
Meningococcemia Without Meningitis: Report of Case. L. D. Watson, Milton, Mass.—p. 685.
Nutrition. H. Jeghers, Boston.—p. 687.

225:709-762 (Nov. 6) 1941

- Complications of Thyroid Substitution Therapy. W. T. Salter, Boston.—p. 709.
Problems in Recognition and Treatment of Testicular Insufficiency. A. T. Kenyon, Chicago.—p. 714.
Use of Female Sex Hormones in Disorders of Women. G. van S. Smith, Brookline, Mass.—p. 719.
Current Status of Female Sex Hormones. R. G. Hoskins, Boston.—p. 722.
Metabolic Factors in Cause and Control of Dental Caries. A. M. Butler, Boston.—p. 746.

New Jersey Medical Society Journal, Trenton

38:557-620 (Nov.) 1941

- Operation of Blood Bank: Two Years' Experience. L. M. Goldman, P. Levine, H. Sprinz and W. Antopol, Newark.—p. 561.
Some Fundamental Aspects of Radiation Biophysics and Biochemistry. C. Oderr, Westfield.—p. 564.
The Tuberculous Individual. H. S. Read, Ventnor.—p. 569.
Surgical Treatment of Peptic Ulcer. T. A. Shallow, Philadelphia.—p. 576.
Rhinoscleroma in New Jersey: Case Report. H. Z. Goldstein, Newark.—p. 581.

Northwest Medicine, Seattle

40:397-434 (Nov.) 1941

- Present Day Insulins. L. J. Palmer and G. D. Capaccio, Seattle.—p. 400.
Diabetes: Disturbance in Endocrine Regulation of Blood Sugar: Endocrine Balance in Carbohydrate Metabolism. S. Soskin, Chicago.—p. 403.
Common Cold in Children. D. M. Dayton, Tacoma, Wash.—p. 409.
Diagnosis and Treatment of Gout. R. L. Cecil, New York.—p. 411.
Abdominal Pregnancy: Report of Two Cases. J. H. Brown, Cle Elum, Wash.—p. 414.
Microslide Diagnosis of Atypical Gonorrhea. W. R. Jones, Seattle.—p. 416.
Chronic Brucellosis. C. C. Goss, Seattle.—p. 419.

Oklahoma State Medical Assn. Jour., Oklahoma City

34:465-510 (Nov.) 1941

- Dissecting Aneurysm of Left Common Iliac Artery: Report of Case. K. A. Brewer, Camp Shelby, Miss.—p. 465.
Electrotherapy in Ophthalmology. M. Wiener, St. Louis.—p. 467.
Shock Therapy in Affective Disorders. M. P. Prosser, Norman.—p. 471.
Significance of Detailed and Accurate Ophthalmologic Information and Its Interpretation as Factor in Neurologic Diagnosis. M. Wiener, St. Louis.—p. 474.
Pitfalls of the Cesarean Baby. E. E. Beechwood, Bartlesville.—p. 479.
Infection Among Selectees. W. H. Bailey, Fort Sill.—p. 481.

Pennsylvania Medical Journal, Harrisburg

45:97-192 (Nov.) 1941

- Common Errors in Selection of Patients for Surgery. C G Heyd, New York—p. 111.
- Emotions and Bodily Reactions I. A. Darling, Torrance—p. 115.
- Medical Selection of Soldiers. Stating the Problem C. H. Henninger, Pittsburgh—p. 119.
- Viewpoint of Local Medical Selective Service Examiner. G S Backenstoe, Emmaus—p. 121.
- Diagnosis and Treatment of Abscess in and About Liver. C L Wilmoth, Pittsburgh—p. 123.
- Contact Dermatitis M. W. Rubenstein, Pittsburgh—p. 127.
- Transplantation and Regeneration of Tissue. H May, Philadelphia—p. 130.
- Intern Laboratory Education in General Hospital H. H. Van Horn, Harrisburg—p. 136.
- Tuberculous Pericarditis: Case Report L. Lasday and K. Yardumian, Pittsburgh—p. 139.
- Trichobezoar: Case Report T. J. Summey and F. F. Borzell, Philadelphia—p. 142.
- *Neurosurgical Treatment of Certain Types of Low Back Pain S. N. Rowe, Pittsburgh—p. 144.

Neurosurgical Treatment of Low Back Pain.—From his experience with 20 cases of low back pain Rowe suggests that the diagnosis of an intraspinal lesion producing low back pain rests on three points: (1) a history of intermittent pain in the back, with sharp paroxysms in the distribution of the sciatic nerve, associated with numbness or weakness of the affected leg and persisting in spite of conservative treatment; (2) definite changes on careful neurologic examination, and (3) roentgenographic changes following the subarachnoid injection of a contrast medium. Adequate neurosurgical treatment of patients with such pain may be expected to result in the relief of pain (complete in 75 per cent and definite in the remainder) and the return to work of about 75 per cent of the patients with a lesion of the intervertebral disk and most of the patients with pain due to spinal arthritis.

Southern Medical Journal, Birmingham, Ala.

34:1093-1216 (Nov.) 1941. Partial Index

- *Local Use of Sulfathiazole in Dermatoses H. M. Robinson and H. M. Robinson Jr., Baltimore—p. 1093.
- Reactions from Use of Sulfathiazole Their Frequency and Treatment in Urologic Cases C. E. Burkland, Sacramento, Calif., and R. W. Satterthwaite, Baltimore—p. 1095.
- *Value of Cultural Method for Diagnosis of Gonococcal Infections. T. E. Weiss and S. H. Colvin Jr., New Orleans—p. 1102.
- Shock from Posterior Pituitary Extract W. Bickers, Richmond, Va—p. 1112.
- Effect of B Complex Syrup on Cardiovascular System of Pregnant Negro Women M. E. Groover, Quitman, Ga—p. 1113.
- Etiology of Gangrene Associated with Deep Neck Infections C. D. Blassingame, Memphis, Tenn—p. 1121.
- *Clinical and Statistical Evaluation of Histaminase E. C. Fox, Dallas, Texas—p. 1124.
- Renal Complications in Acute Gingivostomatitis in Children C. H. Webb, Shreveport, La—p. 1136.
- Correction of Disorders of Speech T. E. Johnson, University, Ala—p. 1143.
- Treatment of Idiopathic Sciatica by Epidural Injection of Almond Oil and Procaine Hydrochloride C. B. Odom and M. C. Kolecun, New Orleans—p. 1149.
- Pilonidal Sinus Review of Its Literature and Report of Eighty Seven Cases M. J. Tendler, Memphis, Tenn—p. 1156.
- Tularemia Due to Tick Bite S. L. Levin, Fayetteville, Ark—p. 1169.

Sulfathiazole in Dermatoses.—The Robinsons used a 5 per cent sulfathiazole ointment for the treatment of the dermatosis of 94 patients. Fifty-eight had pyoderma, 26 had other conditions complicated by secondary coccogenic infection and 10 had various infections not related to coccogenic infection. Eight did not return after the first visit. The healing of the lesion of 48 patients with impetigo contagiosa or ecthyma indicated that the method is effective. The lesion of only 1 patient failed to heal. The shortest time in which impetigo contagiosa healed completely was three days and the longest period was thirty-two days; the condition of the patient with the latter healing period was complicated by tuberculosis ulcerosa, severe secondary anemia and adverse environment. The dermatosis of the rest of the patients involuted in five to eight days, with the exception of that of 2 with carbuncles which had been incised, but even in them healing was complete in fourteen days. The primary condition of the 26 patients with secondary pyodermic infection was not benefited by the treatment with sulfathiazole ointment, but the complicating secondary infection was con-

trolled. The authors believe that the results were equal or slightly superior to those obtained with gentian violet and far superior to those obtained with ammoniated mercury ointment. The sulfathiazole ointment was valueless in inguinal granuloma, epidermophytosis, uncomplicated contact dermatitis, indurated erythema and herpetiform dermatitis. Good results were obtained in 2 patients with chancroid and 1 with tinea kerion. No trace of sulfathiazole was revealed in the blood stream after continuous treatment for one week.

Diagnosis of Gonococcal Infections.—Weiss and Colvin make a plea for the wider use of the cultural method for isolating the gonococcus. They base their belief that the method is more accurate than the generally used direct smear on the following data: Of 13,783 cases collected from the literature in which direct smears and cultures were made, the diagnosis of gonorrhea was justified in 4,482. In 1,194, or 26.64 per cent, only a positive culture was obtained. Only a positive smear was obtained in some 471, or 10.52 per cent. An epitome of these figures shows that of the 4,482 cases of gonorrhea in 3,288, or 73.24 per cent of the total, the diagnosis could have been made by the smear alone; in 26.64 per cent only a positive culture was secured from the material examined. Therefore, some 89.48 per cent, or 4,011 cases, could have been diagnosed by the culture method alone. Furthermore, of 621 specimens examined for the gonococcus at the Touro Infirmary 119, or 19.66 per cent, were positive; 38 specimens produced a positive culture as well as a positive smear, whereas 33 gave only a positive smear. In some 48 specimens demonstration of the gonococcus was possible by the culture method alone, that is, a positive culture was obtained whereas the smear showed no intracellular gram-negative diplococci. Therefore, examination by the direct smear alone would have rendered only 71 positive diagnoses, missing 40 per cent of the cases.

Evaluation of Histaminase.—Fox declares that the data obtained from seventy fellows of the American Academy of Dermatology on 962 patients with dermatosis treated with histaminase show that 15.39 per cent of the patients obtained temporary improvement, 10.49 per cent permanent improvement and 74.12 per cent no improvement. There are some indications that the drug may be useful for the management of serum sickness, angioneurotic edema, sensitivity to foods and drugs and physical allergy.

Surgery, St. Louis

10:699-860 (Nov.) 1941

- Location of Lateral Spinothalamic Tract in Brain Stem of Man A. T. Rasmussen and W. T. Peyton, Minneapolis—p. 699.
- Repair of Cranial Defect with Vitallium Plate W. T. Peyton and H. B. Hall, Minneapolis—p. 711.
- Glycogen Content of Human Liver D. S. MacIntyre, El Paso, Texas, S. Pedersen and W. G. Maddock, Ann Arbor, Mich—p. 716.
- *Colon Bacillus Septicemia Associated with Acute Cholecystitis B. Lipshutz and L. Kaplan, Philadelphia—p. 730.
- Peritoneoscopy. R. T. Shackelford, Baltimore—p. 742.
- Trans thoracic, Transpleural Ligation of First Portion of Left Subclavian Artery Report of First Case A. S. W. Touroff, New York—p. 747.
- Recurrences and Failures Following Modern Treatment of Varicose Veins P. J. Sarma, Chicago—p. 752.
- Blood Ether Levels in Surgical Anesthesia R. Potter, Huberta Livingston, E. Andrews and Geraldine Light, Chicago—p. 757.
- *Complication from Use of Glove Powder. I. X. Byron and C. S. Welch, Albany, N. Y.—p. 766.
- Technic for Measurement of Local Fluid Loss in Experimental Traumatic Shock M. L. Cullen and N. E. Freeman, Philadelphia—p. 770.
- Cajedrol New Analgesic and Antiseptic for Genitourinary System C. F. Elvers and C. E. Burkland, Baltimore—p. 776.
- Malignant Degeneration in Case of Multiple Benign Fibroses Brief Review of Literature G. E. Bennett and G. A. Berkheimer, Baltimore—p. 781.
- Parathyroid Glands: Malignant Tumor with Osteitis Fibrosa Cystica R. J. Gentile, Seattle; H. L. Skinner, Baltimore, and L. L. Ashb. Jr., Washington, D. C.—p. 793.
- Fascial Reconstruction of Tibial Collateral Ligament H. Mulch, New York—p. 811.

Colon Bacillus Septicemia with Cholecystitis.—Lipshutz and Kaplan state that colon bacillus septicemia associated with acute disease of the biliary tract may occur in three forms: as an acute and persistent septicemia from the outset, as a temporary bacillemia immediately after trauma to an area infected with colon bacilli and as a terminal bacillemia. They report 3 cases of the first type. The condition in these cases is

characterized by the abrupt onset of severe or of mild abdominal pain accompanied by chills, fever and intense toxemia. After a few days, signs which suggest the primary focus in the gallbladder may be so masked as to make diagnosis difficult. Immediate cholecystectomy appears to be the only treatment. Cholecystectomy saved the authors' first patient, who was unquestionably moribund, and after cholecystectomy the infection of the second patient subsided rapidly. The death of their third patient was attributed to perforation of the gallbladder and subphrenic abscess rather than to septicemia. They believe that an earlier diagnosis and an immediate operation might have saved this patient.

Complication from Use of Glove Powder.—Byron and Welch discuss the miliary granulomatous lesions resembling tubercles observed in old abdominal incisions of 4 patients. The finding of talcum powder in the pseudotubercles of the peritoneum in 2 patients with regional ileitis suggested to them that the implanting of talcum in such patients may be enhanced because multiple operations are often necessary before resection is done. Talcum may be responsible for at least part of the pathologic picture. Although glove powder may be responsible for these surgical complications the advantages of the powdered glove over the wet glove technic are too great, in the authors' opinion, to recommend a change to the latter, and therefore they suggest that a minimum of powder be used in preparing and in putting on surgical gloves and that the gloves be washed carefully after they are put on in order to eliminate as much powder as possible.

Surgery, Gynecology and Obstetrics, Chicago

73:601-758 (Nov.) 1941

- *Subcostosternal Diaphragmatic Hernias. Foramen of Morgagni S W Harrington, Rochester, Minn—p 601
- Cerebral Arteriovenous Aneurysms B S Ray, New York—p 615
- Surgical Treatment of Acute Cholecystitis in Patients Fifty Years of Age and Over F. Glenn, New York—p 649
- Congenital Clefts of Face and Jaws. Report of Operations Used and Discussion of Results H. P. Ritchie, St. Paul—p 654
- Treatment of Comminuted Fractures of Os Calcis W. R. Mac Ausland, Boston—p 671
- Principles Which Govern Extent of Gastric Resection for Duodenal Ulcer V. C. Hunt, Los Angeles—p 676
- *Uterine Contractions of Late Pregnancy and Their Relation to Duration of Labor Study of 129 Patients with Lorand Tocograph D. P. Murphy, Philadelphia—p 681
- Intravenous Use of Synthetic Vitamin K A M Seligman, A Hurwitz, H. A. Frank and W. A. Davis, Boston—p 686
- Hip Fractures Treatment by Multiple Kirschner Wire Method, J B Chester, Fort Lewis, Wash—p 702
- One Stage Operation for Cure of Carcinoma of Ampulla of Vater and of Head of Pancreas I R Trimble, J W Parsons and C P Sherman, Baltimore—p 711
- Slipping of Upper Femoral Epiphysis M. B. Howorth, New York—p 723
- Chorioepithelioma in Male Treated with Pregnancy Serum G H Twombly and A F. Hocker, New York—p 733
- Carcinoma of Gallbladder and Extrahepatic Bile Ducts Clinical and Pathologic Study of 117 Cases in 13,330 Necropsies J D Kirschbaum, and D D Kozoll, Chicago—p 740.

Subcostosternal Diaphragmatic Hernias.—Harrington encountered 4 adults (64, 46, 34 and 27 years of age) with subcostosternal hernia among 270 with various types of diaphragmatic hernia. The patients, 2 men and 2 women, had no history of trauma. One of the women had an esophageal hiatus diaphragmatic hernia as well as the subcostosternal hernia. The operative approach for the repair of the hernia was abdominal in all 4 patients. The sac was removed from 2 and it was left in place in 2. The herniated viscera were replaced and the opening was repaired in all 4. There were no operative deaths or subsequent recurrences.

Uterine Contractions of Late Pregnancy.—Murphy studied with the Lörand tocograph the uterine contractions of 129 women in the ninth and tenth lunar month of pregnancy. He observed that the women who did not experience contractions had shorter labors than the average. The contractions exhibited a wide variation in their measurements from woman to woman. However, a relation did exist between the nature of the uterine motility and the length of labor. Tension was observed to have no value in the prediction of the duration of the labor, whereas knowledge of the contractions was helpful. The short labor was usually preceded by infrequent, rhythmic, long and strong contractions. Furthermore, it appeared that

contractions, regardless of their strength, which rose slowly to a maximum and fell away at the same rate were indicative of a more efficient kind of activity during labor than the ones which rose and fell quickly, suggesting that a long contraction is better than a short one.

Texas State Journal of Medicine, Forth Worth

37:449-512 (Nov.) 1941

- Endocarditis Lenta R H. Major, Kansas City, Mo—p 453.
- Present Day Possibilities for Endocrine Therapy in Pediatric Practice F W. Schlutz, Chicago—p 457.
- Multiple Stage Resections of Colon L. S. Fallis, Detroit—p 463.
- Problem of Sterility and Reduced Fertility. Clinical Laboratory Aspects D. A. Todd, San Antonio—p 467.
- Problem of Sterility. L. J. Globor, San Antonio—p 470
- Recent Advances in Ophthalmology. A B Reese, New York—p 475
- Some Remarks on Medical and Surgical Treatment of Sinusitis. E. F Stroud, Corpus Christi—p 478
- Present Status of Irradiation Treatment in Neoplastic Disease G W Holmes, Boston—p 481.
- Are We Lowering the Mortality Rate of Mother and Child by "Streamlining" Our Obstetrics? W. B. Reeves, Greenville—p 486.
- Development of the Public Health Law in Texas J. R. Yarbrough, Austin—p 488
- Administrative Problems in Public Health in Texas G W. Cox, Austin—p 493.

War Medicine, Chicago

1:745-944 (Nov.) 1941

- *Fitness, Fatigue and Recuperation Survey of Methods Used for Improving Physical Performance of Man. F. A. Hellebrandt, Madison, Wis., and P. V. Karpovich, Springfield, Mass—p 745.
- Neurologic and Psychiatric Examination During Military Mobilization: Results and Suggestions Derived from Study of 9,652 Men J. A. Aita, Rochester, Minn—p 769
- *Wartime Anesthesia R. B. Phillips, Buffalo—p 781.
- Anesthesia for Military Needs A L Tynes, Washington, D. C.; W. W. Nichol, San Francisco, and S C Wiggins, Boston—p 789.
- Chemotherapy of Experimental Gas Gangrene and Tetanus Infections in Mice. Eleanor A. Bliss, P H Long and Dorothy G Smith, Baltimore—p 799
- *Occupational Health Hazards in Aircraft Production J P. Russell and F R Ingram, Berkeley, Calif—p 811.
- Pathogenesis of Traumatic Unconsciousness: Importance of Fat Embolism W. de Gutierrez Mahoney, Nashville, Tenn—p 816.
- Chemical Studies in Traumatic Shock. H Gutmann, H. H. Kroll, W. H. Olson, S O Levinson and H. Necheles, Chicago—p 824
- Circulating Time in Shock W. H. Olson, H. Gutmann, S O Levinson and H. Necheles, Chicago—p 830.
- Condensed Neuropsychiatric Examination for Use by Selective Service Boards W. C. Menninger, Topeka, Kan—p 843
- *Dementia Praecox in Military Life as Compared with Dementia Praecox in Civil Life. A. M. Duval and J. L. Hoffman, Washington, D C—p 854.
- *Reduction of Communicable Diseases Among Troops and Children During National Defense Program W. C. Davison, Durham, N. C—p 863
- *Problem of Deafness in Aviators C C. Bunch, St. Louis—p. 873.
- Compensation for War Neuroses E Levy, Topeka, Kan—p 887.
- Serologic Classification of Hemolytic Streptococci Pathogenic for Man L A Rantz, San Francisco—p 895

Fitness, Fatigue and Recuperation.—Hellebrandt and Karpovich suggest that the average man lives and works on a plane below his peak capacity. The question which arises is whether the use of ergogenics is hazardous if they improve the output of work by eliminating fatigue. The difficulty resides in the differentiation between "normal limits of fatigue set by the body" and the variable terminuses set by the mind. Wisely administered, an ergogenic may be life saving. When an acute emergency exists it may be wiser to resort to ergogenics than to abandon the exhausted. In sports any artificial intoxicating stimulant probably should be avoided, but, the authors point out, the same principle does not apply to life and death exhaustion problems associated with war. Ergogenic aids that augment work capacity by improving the condition of the machine are the safest and most physiologic. Those which push the person beyond normal endurance are potentially dangerous and should be reserved strictly for emergency use. The most enduring gain can probably be attained by systematic physical training which arouses a desire for fitness.

Wartime Anesthesia.—Phillips states that anesthesia in time of war differs from that in times of peace in that the anesthetic must be easily carried and administered. It should preferably be nonexplosive. Spinal and intravenous anesthesia play an extremely important part in modern warfare and therefore at least 25 per cent of the men in all medical units should be well acquainted with the administration of these two types of anesthesia.

Occupational Health Hazards.—Russell and Ingram point out that the health hazards encountered in the processes necessary to aircraft production are similar to those in some other industries. No process or operation in aircraft manufacture is peculiar to that industry, except possibly the coating of fabric with a quick drying paint ("dope") and the puncture proofing of gasoline tanks. The hazards can be eliminated or minimized by practical, common sense precautions and control measures.

Dementia Precox.—According to Duval and Hoffman, there are significant differences in dementia precox encountered in military life and that encountered in civil life. These differences, they say, are not generally recognized, even by some psychiatrists recently called into military service. The onset of dementia precox in military life is apt to be abrupt, and this course is likely to be short and stormy. Recovery is frequent and relatively rapid. Therefore military physicians, who first encounter such patients, are not justified in giving a poor prognosis, as of 100 such patients 47 per cent were well enough in a few months to be discharged from the hospital. Characteristic features of conversion hysteria and of schizophrenia are displayed by military patients with dementia precox.

Reduction of Communicable Diseases.—Davison believes that the appointment of a consulting pediatrician (experienced in the prevention of communicable diseases) to the services would be judicious, for although influenza, pneumonia, bronchitis and tonsillitis were responsible for most of the morbidity and mortality in World War I half a million soldiers and sailors were affected by pediatric diseases, especially mumps, measles, scabies, rheumatic fever, vaccinia, rubella, scarlet fever, diphtheria, meningitis, dysentery, impetigo and chickenpox, in that order. These twelve diseases affected twice as many men in the Army and Navy as did wounds and half as many as did influenza.

Deafness in Aviators.—Bunch states that it appears that exposure to excessively loud noise, whether in aviation or boiler-making, is the common cause of hearing losses: in aviation, he concludes, the loud noises of airplanes and airplane motors often impair the hearing of pilots. Not all pilots are similarly affected. The hearing losses most frequently encountered are for tones near c-4 (2,048 double vibrations) and c-5 (4,096 double vibrations). As the loss progresses with continued exposure, the acuity for lower tones is also affected. Pilots with a decreased acuity for tones near c-3 (1,024 double vibrations) will have difficulty in understanding certain words over the radio and may not hear landing instructions correctly. If the radio guide beam has a frequency near c-3 (1,024 double vibrations) pilots with hearing losses for tones near c-3 can follow it only if they have their radios turned on louder than is ordinarily necessary. Lightning created static in the ears of such pilots may cause additional temporary or permanent hearing losses, incapacitating them to such an extent that they may be unable to hear the radio beam. The hearing losses discussed often escape detection, as the persons affected may be unaware of the impairment because they usually hear the spoken voice. It is possible that the hearing of the pilots involved in the recent airplane accidents may have been impaired, or it may be that permanent losses made it impossible for the pilots to follow the radio beam or to understand exact landing instructions. The problem of hearing losses can be solved only by frequent and accurate audiometric tests.

Western J. Surg., Obst. & Gynecology, Portland, Ore. 49:599-642 (Nov.) 1941

- Hoarseness and Cancer of Larynx. L. H. Clerf, Philadelphia.—p. 599.
Suitability of Extravasated Blood for Reinfusion: Comparison of Venous and Abdominal Blood in Extrauterine Pregnancies. E. W. Page, Berkeley, Calif.—p. 603.
Traumatic Neuroses and Psychoses. L. J. Karnosh, Cleveland.—p. 606.
New Orientation on Etiology of Toxemia of Pregnancy and Some Practical Applications. J. Hofbauer, Cincinnati.—p. 615.
Regimen for Treatment of Acute Head Injuries: Based on 1,000 Personal Cases. M. A. Glaser, Los Angeles.—p. 619.
Compound Fractures. C. Mathewson Jr., San Francisco.—p. 628.
Clinical Use of Symbalophone: Improved Double Stethoscope for Lateralization and Comparison of Sounds. W. J. Kerr, San Francisco.—p. 632.
Hitherto Unreported Case of Quintuplet Births, Wisconsin 1875. W. C. Keettel, Madison, Wis.—p. 636.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:533-568 (Oct. 18) 1941

Scope of Operation in Treatment of Varicose Veins. R. T. Payne.—p. 533.

*Thrombosis in Superior Longitudinal Sinus Following Childbirth. J. P. Martin.—p. 537.

Oral Medication by Sobisminol in Treatment of Syphilis. R. C. L. Batchelor, Marjorie Murrell and G. M. Thomson.—p. 541.

Radiographs and Disproportion. J. V. O'Sullivan, with addendum by F. M. Crawshaw.—p. 543.

*Sulfanilamide in Local Treatment of Skin Infections. A. G. Marshall.—p. 544.

Sagittal Sinus Thrombosis After Childbirth.—Martin discusses 3 cases of puerperal thrombosis in the superior longitudinal sinus. Although one death occurred, it was due not to the thrombosis but to a spinal lesion. In addition to these 3 cases the author has encountered 2 showing similar symptoms following stillbirth, 1 with symptoms following abortion in which the right cavernous sinus was evidently thrombosed and 1 in which there were long-standing residual disabilities from a puerperal illness which must have been due to extensive thrombotic involvement in the superior longitudinal sinus. It is suggested that a fragment of clot carried up to the superior longitudinal sinus from the pelvic veins by way of the vertebral venous system acts as the nucleus for the clot which forms in the sinus.

Sulfanilamide for Cutaneous Infections.—Marshall used sulfanilamide powder locally for the treatment of men with previously unsuccessfully treated sycosis, contagious impetigo and other local cutaneous infections. The men were treated in the hospital as ambulant but isolated patients. The scabs were bathed three or four times a day with a warm 2 per cent solution of sodium bicarbonate. The sulfanilamide powder (streptocide) was applied directly to the raw surface, to which it adhered. No dressings were used. The healthy areas were shaved regularly, the hair was clipped short elsewhere and shampoos were given frequently. For thick masses of exudate which did not separate easily a gauze pad soaked in liquid petrolatum was applied for twelve hours before treatment was begun. Oily dressings, other than the liquid petrolatum, were avoided, as with their use the infection spread. For certain patients the oral administration of ascorbic acid and roentgen irradiation are suggested to accelerate healing.

Edinburgh Medical Journal

48:649-712 (Oct.) 1941

Significance of Fear. D. K. Henderson.—p. 649.

Lingual Thyroid: Myxedema Following Its Removal. W. E. Foggie.—p. 662.

Changing Heart Murmurs of Acute Rheumatism. A. J. Glazebrook and S. Thomson.—p. 669.

Acute Rheumatism and Trauma. A. J. Glazebrook and S. Thomson.—p. 674.

Biopsy of Sternal Bone Marrow as Diagnostic Procedure. L. S. P. Davidson.—p. 678.

Three Old Hospital Diets. A. E. Buchan and O. J. Jehu.—p. 688.

Journal of Mental Science, London

87:477-650 (Oct.) 1941

Ear, Nose and Throat Disease in Mental Disorder. T. C. Graves.—p. 477.

Sinus Trouble and Personality. H. G. B. Russell.—p. 479.

Curability of Mental Diseases by "Shock" Treatment: Analysis of Cases Treated. R. Freudenberg.—p. 529.

Study of Erythredema Polynuritis (Pink Disease), with Special Reference to Its Symptomatology and Possible Etiology. T. A. Ratcliffe.—p. 545.

Etiology of the Fugue States. E. Stengel.—p. 572.

Hyperostosis Frontalis Interna: Its Relationship to Cerebral Atrophy. R. M. Stewart.—p. 600.

*Allergic Factor in Idiopathic Epilepsy. D. C. Dewar.—p. 605.

Cutaneous Nevus with Buphthalmos and Epilepsy: Case Report. R. Ironside and D. Hill.—p. 631.

Scheid's Cyanotic Syndrome: Case Record and Summary of Original Monograph of K. Scheid. H. A. Palmer.—p. 635.

Allergic Factor in Idiopathic Epilepsy.—Dewar points out that inquiry into the personal and family histories of 24 epileptic, 24 psychotic and 24 normal subjects revealed that 66 per cent of the patients with epilepsy had either a positive

personal or a positive family history of allergy, while 20 per cent had a positive history in both instances. The corresponding figures for the psychotic patients were 25 and 0 per cent and 17 and 0 per cent for the control group. The association of seizures and hypersensitivity suggested a relationship between epilepsy and allergic disorders. Intramuscular desensitization, combined with specific elimination, was tried in 12 of the 24 epileptic patients. The results were encouraging without being spectacular. Some degree of desensitization was achieved in 9 of the 12 patients; in 4 the response amounted to a definite improvement (alleviation of symptoms). One patient has had only a single seizure in the last year, whereas before treatment the monthly average had been eight. Generally most of the patients were having fewer fits and several admitted feeling better. Generally they were quieter and conducted themselves more rationally.

Lancet, London

2:443-474 (Oct. 18) 1941

Hemoglobin Metabolism. M. C. G. Israëls.—p. 443.

*Ligation and Chemotherapy for Infection of Patent Ductus Arteriosus. G. Bourne, K. D. Keele and O. S. Tubbs, bacteriologic note by R. H. A. Swain.—p. 444.

*Crush Injury with Recovery: Case. A. I. L. Maitland.—p. 446.

Cyclopropane Anesthesia. R. B. Gould.—p. 449.

Gastrocolic Fistula Complicating Diabetes Mellitus. I. M. Anderson, P. Hamill and R. Galloway.—p. 452.

Polyradiculoneuritis: Case. W. Bridgen.—p. 454.

Ligation in Patent Ductus Arteriosus.—Bourne and his associates combined surgical intervention with sulfapyridine therapy for 2 patients with infection of a patent ductus arteriosus. The first patient has been an active working citizen free from cardiovascular symptoms for four months. There has been some persistence of hematuria from coexistent nephritis. The second patient has remained well for eleven months.

Crush Injury with Recovery.—Maitland reports the recovery of a man of 40 from severe renal failure resulting from being pinned by debris across the right thigh and the right side of the trunk. The patient also had a lesion of the right brachial plexus and pulmonary concussion. Protein was withheld, fluids were forced and injections of adrenal cortex extract were given. A large proportion of fluid (25.5 liters) given between the seventh and the fifteenth day was retained without any decided increase in the edema, although anasarca was present between the sixteenth and the twenty-eighth day of illness. Improvement began on the tenth day, and four months after the injury the patient is able to be up most of the day. Recovery was made in spite of intercurrent bronchopneumonia and a streptococcal infection of the throat. In spite of treatment anemia persists, suggesting some renal damage not detectable by tests of renal function. Almost all the extensor power of the affected thigh has been lost, although the thigh is anatomically normal. The renal failure in such cases may be attributed to vascular stasis, lack of fluid intake during the period of burial and flooding of the circulation with protein from damaged muscle.

Practitioner, London

147:609-672 (Oct.) 1941

Medicine. H. Cohen.—p. 609.

Surgery. G. E. Gask.—p. 620.

Gastroenterology: Dyspepsia in the Forces. A. H. Douthwaite.—p. 622.

*Dietetics: Reevaluation in Terms of War Conditions. V. H. Mottram.—p. 630.

Diseases of Children. W. Sheldon.—p. 636.

Endocrinology. R. Greene.—p. 642.

Neurology. M. Critchley.—p. 650.

Rheumatic Diseases. G. Holmes.—p. 654.

Minor Surgery: IV. Genitourinary System. C. Morson.—p. 662.

Dietetics.—According to Mottram, a "peasant diet," rich enough in carbohydrates to supply energy needs and consisting of whole meal bread (fortified with calcium), cereals, potatoes, legumes, some animal protein, milk ($\frac{1}{4}$ pint [125 cc.] daily) and vegetables, is theoretically and experimentally satisfactory for the healthy adult. Such a diet is being forced on the nation by government rationing. Until it is proved or disproved that such a diet is sufficient for children it will be wise not to allow the child's daily intake of milk to fall below 1 pint. The vitamin C intake of infants and small children can be made adequate with black currant juice or purée of the juice of turnips.

South African Medical Journal, Cape Town

15:369-392 (Oct. 11) 1941

*Outbreak of Pneumonic Plague in the Kalahari. G. W. Gale.—p. 369.
Live Plague Vaccine as Prophylactic Against Plague. E. Grasset.—p. 373.

Present Status of Synthetic Estrogens. L. Goldberg and O. S. Heyns.—p. 375.

Occurrence of Relapsing Fever and Geographic Distribution of Ornithodoros Moubata in South Africa, with Account of Investigations Carried Out in Northern and Eastern Transvaal. D. Ordman.—p. 383.

Hereditary Transmission of Rickettsiae of Tick Bite Fever Through Common Dog Tick, Hemaphysalis Leachi. J. Gear and B. de Meillon.—p. 389.

Pneumonic Plague in the Kalahari.—Gale discusses the history of an outbreak of pneumonic plague in the Morokwen Native Reserve (36 deaths and 1 recovery), the origin of the outbreak, which probably was in veld rodents, and the prophylactic use of live vaccine. The diffusive power of the outbreak was low; for example, 2 or 3 men who slept for several nights in the same hut as 1 dying from pneumonic plague escaped infection. The control measures were as follows: The whole of the Morokwen Reserve was declared a plague infected area, and all egress from it, except on special certificate, was stopped. One person broke quarantine, and this led to the infection of another village. Live (avirulent) plague vaccine was supplied, and a single dose of 1,000 million organisms in 1 cc. was given to more than 1,000 natives and 40 to 50 Europeans. Pain and generalized reaction were not complained of. Many children were vaccinated with reduced doses. Most of the 1,000 persons vaccinated at Morokwen were never exposed to any real risk. However, at least 104 persons were close contacts but did not contract plague; 20 of these were not vaccinated until seven days or more after contact. Their escape can be attributed to factors other than vaccination; 37 were vaccinated within seven days of contact and 47 prior to contact; their escape may have been the result of vaccination. Plague developed in 6 vaccinated persons; 5 of them died, 2 on the first, 2 on the third and 1 on the fourth day of illness. These 5 patients were in contact with pneumonic plague from one to six days before vaccination, whereas the patient who recovered made contact five or six days after vaccination. This patient was not given antiplague serum until the fourth day of her illness.

Archives de l'Institut Pasteur de Tunis

30:1-150 (June) 1941. Partial Index

*Antityphic Serotherapy: 120 Cases of Exanthematous Typhus Treated with Serum Obtained by Inoculations of Rickettsiae from Lungs of Mice. P. Durand and L. Balozet.—p. 1.

Presence of a Rickettsia Virus in Wild Rabbits. H. Violle and C. Joyeux.—p. 23.

Diverse Stocks of Saprophytic, Paratuberculous Acid-Resistant Bacilli: Contribution to the Study of Acid-Resistant Bacilli. V. Cabasso.—p. 26.

Two Cases of Human Hydrophobia of Meningeal Form; Remarks on Meningeal Reactions in Course of Natural or Experimental Animal Hydrophobia. P. Durand.—p. 55.

Study of Cardiovascular Complications of Ancylostomiasis and of Other Helminthiasis. R. Broc and A. Calo.—p. 77.

Bacillary Dysentery. C. Berge and J. Fauconnier.—p. 103.

Typhus Treated by Serum.—The serum employed against exanthematous typhus by Durand and Balozet is obtained by subcutaneous or intravenous inoculations of horses with rickettsias from the lungs of mice infected via the respiratory tract with murine or epidemic virus. Experimentation having shown that the neutralizing properties of this serum greatly exceed those of human convalescent serums, it seemed advisable to try it in human subjects. In complete ignorance of the quantity of serum required, the authors began with massive doses of 100 to 200 cc., with perhaps a new injection the following day. Later they reduced the dose, and in the end they gave only 100 cc. in a single injection as soon as possible. The injection is made by preference into the crural quadriceps, the resorption being more rapid and the pain less annoying than if injection is made into the flank. The serum was used in the course of an epidemic during the first months of 1941. In 102 native born Tunisians with exanthematous typhus cure was obtained rapidly in two to four days on the average. The mortality was greatly reduced. This could be ascertained by comparison with 161

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patients who were treated in the same manner except that they did not receive serum. The gross mortality rates were 3.92 and 12.42 per cent, respectively; the corrected percentages were 3.92 and 14.28, respectively. Even if one adds the patients on whom the serum was first tried the mortality was only 4.46 per cent; that is, it was about a third of the rate among the patients not treated with serum. With the 8 Europeans on whom the serum treatment was used the results were not as favorable as in the native born patients, but their number was too small for one to arrive at definite conclusions.

Dermatologica, Basel

84:1-128 (No. ½) 1941

*Catamnestic Investigations in Late Syphilis: Fate of Syphilitic Patients. E. Rajka and A. Orbán.—p. 1.

Aspects of Atypical Cases of Dermatitis Herpetiformis. C. H. Beck.—p. 70.

*Chronic Intermittent Treatment of Dyshidrosis with Mixed Vaccines. A. Dósa.—p. 75.

Fate of Syphilitic Patients.—Rajka and Orbán made follow-up studies on 200 syphilitic patients in order to determine the efficacy of the treatment. The earliest date of the control examination was the fifth year after the infection, when a stable condition of the cerebrospinal fluid could be expected. However, since the reaction of the cerebrospinal fluid may turn positive later and since cardiovascular changes likewise usually appear later, control examinations must be repeated later than the fifth year. The patients investigated were workers and craftsmen who attended an outpatients' hospital in Budapest. Complete cure was obtained in 21 per cent, or in 37.5 per cent if patients with so-called neurologic residues are included. These conditions may be regarded as residues of processes that have taken their course, provided the results of all the tests (of the blood and the cerebrospinal fluid) have remained negative after prolonged supervision. A positive seroreaction without clinical symptoms was observed in 9.5 per cent of the patients; 6.5 per cent of these had received intensive treatment and thus must be regarded as seroresistant patients who required treatment with specific and nonspecific methods. In 5.5 per cent (including 2 per cent of seroresistant patients) reactivation of seroreactions was observed. Successful provocation indicates latent seropositivity. Clinical symptoms were observed in 53 per cent of the patients; 35 per cent showed active neurosyphilis and 32 per cent cardiovascular syphilis. In 26.5 per cent of all the patients and in 60 per cent of those with active neurosyphilis the reaction of the cerebrospinal fluid was positive. Only half of those with neurosyphilis and a positive reaction of the cerebrospinal fluid showed a positive reaction of the blood. It proved difficult to classify the observed neurologic sequelae of syphilis under the classic pictures of neurosyphilis. One third of the patients presented rudimentary symptoms which did not correspond with the classic pictures and were designated as neuroresidues. The question whether these residues were the signs of active processes or sequelae of processes which had taken their course had to be decided in each case by further examination. There is no therapeutic method which insures cure in 100 per cent of cases. The question of who incurs neurosyphilis and what factors are decisive in the involvement of the central nervous system is, as Nonne says, as yet unsolved. Present day therapeutic procedures offer, in a third of the cases, no protection against the nervous diseases originated by syphilis. Nevertheless, it could be demonstrated that the number of complete cures was the greater and the sequelae the lesser the earlier treatment was begun and the more intensive and systematic had been the initial treatment.

Treatment of Dyshidrosis with Mixed Vaccines.—Dósa tested patients with dyshidrosis for allergy against fungi. At first he made the intracutaneous tests with fungus extracts only in cases in which fungi had been detected in the dyshidrosis vesicles, but later, when positive cutaneous reactions had been obtained in cases in which fungi had not been observed in the vesicles it was concluded that in these cases fungi also play a part, and all patients with dyshidrosis, irrespective of the results of microscopic and cultural examination, were treated with a vaccine composed of mixtures of numerous fungi and bacteria. The author began with intracutaneous injections of 0.1 cc. and

gradually increased the doses to 2 cc. The larger doses were distributed to several sites in the thigh. The treatment was administered in a chronic intermittent manner in series consisting of twenty to thirty injections. The results obtained with this treatment were better than the results with any other therapy. The author thinks this is because the injections increase the active immunity.

Rivista di Patologia Nervosa e Mentale, Florence

57:163-334 (March-April) 1941. Partial Index

*Reactivation of Wassermann Reaction in Cerebrospinal Fluid, Observed After Intraspinal Injection of Phenolsulfonphthalein. M. Felici.—p. 228.

Amount of Ascorbic Acid in Cerebrospinal Fluid: Researches. R. Grisoni and C. L. Cazzullo.—p. 241.

Reactivation of Wassermann Reaction in Cerebrospinal Fluid.—Felici reports the results of serologic examination of the spinal fluid in 10 patients with neurosyphilis. There was a history of syphilis in all the patients. One patient had tabes and 1 had dementia paralytica. The cerebrospinal fluid of 3 patients showed slight changes before the intraspinal injection of phenolsulfonphthalein. The Wassermann serologic test gave strongly positive results in 4 cases of the 6 in which the Wassermann test on the blood serum gave negative results, and the Müller, Kahn and citochol tests on the blood serum gave positive results. An aseptic meningitis was provoked by the intraspinal injection of 5 cc. of a 5:1,000 phenolsulfonphthalein solution, which was given after the withdrawal of 10 cc. of cerebrospinal fluid. A lumbar puncture was performed twenty-four, thirty-six or forty-eight hours after the injection, when the fever was at its highest. In a few cases, in which the fever lasted for three days, the lumbar puncture was repeated seventy-two hours after the injection, and in all cases it was again performed seven or ten days after the injection. Subjectively the patients complained of headache, spinal pain and paresthesia of the legs. They exhibited rigidity of the neck, absence of tendon reflexes in the legs and paralysis of the sphincter of the bladder. Only 1 patient had vomiting. The symptoms disappeared in all cases within forty-eight hours. The fever disappeared within three days in almost all cases. The cerebrospinal fluid, which was obtained by lumbar puncture, was observed separately in the natural condition and again after being inactivated by being subjected to a temperature of 56 C. for half an hour. It exhibited the following changes: (1) a moderate increase of the albumins, the globulins and the cells, especially the lymphocytes, (2) turbidity and a tendency to flocculation in the second or the third of the tubes used in the mastic test and (3) a moderate pink shade of the fluid for the first forty-eight hours after the injection. Within six days the cerebrospinal fluid became normal or almost normal in all cases. The Wassermann, Müller and Sachs-Witebsky tests gave constantly negative results with all the different specimens of the cerebrospinal fluid, whether in the natural condition or inactivated. The negative results obtained by the author in attempting to reactivate the cerebrospinal fluid with the use of phenolsulfonphthalein agree with those previously reported in the literature in cases in which distilled water or a bismuth compound was used. Because the observations were carried on with a careful technic and all the patients had serologic syphilitic reactions and most of them exhibited precise clinical symptoms of neurosyphilis, the author concludes that the reactivation of the cerebrospinal fluid by the intraspinal injection of distilled water, bismuth compounds and phenolsulfonphthalein is not possible and that consequently the test does not have any diagnostic value of neurosyphilis.

Anais d. Fac. d. Med. d. Univ. d. S. Paulo, São Paulo

16:365-708 (No. 2) 1940. Partial Index

*Cyanotic Chronic Bronchopneumopathy: Clinical and Physiopathologic Study. J. Fernandes Pontes, M. Jamra and A. Carvalho da Silva.—p. 651.

Cyanotic Chronic Bronchopneumopathy.—Fernandes Pontes and his collaborators report 2 cases of Ayerza's disease which were observed in the bronchopulmonary period. No other case of the disease observed in this period has been reported in the literature. In the cases reported by the authors the symptoms were typical. Bronchitis had lasted for forty and twenty-two years, respectively, and the bronchopulmonary symptoms

for about one year. There were dyspnea and acute cyanosis, especially of the lips, face, ears, hands and feet. The respiratory elasticity of the thorax was greatly diminished. The roentgenograms of the lungs showed the changes proper of chronic bronchopulmonary emphysema and sclerosis. There were polyglobulia and macrocytosis. The functions of the heart were normal, but the roentgenograms showed dilatation of the right ventricle and enlargement of the heart. The electrocardiograms showed a shift of the electrical axes to the right and a P wave of increased amplitude in the second and third leads. The Wassermann reaction was negative in both cases. By means of gasometric analysis and hemodynamic determinations the authors found that in their patients the vital capacity was diminished, the dead space of the respiratory bed of the lung was increased and the amount of current air was diminished. There were changes in the pressure of oxygen and carbon dioxide in the alveolar air, hypoventilation of the alveolar air and hypoxemia. There was also hyperplasia of the bone marrow, as it was verified by examination of marrow tissue obtained by sternal puncture. The authors believe that chronic obstructive bronchopulmonary emphysema is the cause of the symptoms of Ayerza's disease, especially cyanosis. According to them, Ayerza's disease is not a clinical entity but a form of chronic obstructive bronchopulmonary emphysema in patients with a constitutional lability of the cardiorespiratory apparatus and a constitutional hyperplastic reactivity of the bone marrow. Syphilitic arteritis of the pulmonary artery may be found as an associated condition in cases of Ayerza's disease, but it is not the cause of the disease. Cyanosis, which is the most evident symptom, is due to anoxic hypoxemia from hypoventilation of the blood. It diminishes when the patients inhale oxygen under pressure for ten or twenty minutes. Hypoxemia stimulates the bone marrow to an erythroblastosis hyperplastic reaction and consequent polyglobulia. The macrocytic changes of the erythrocytes are due to the physicochemical changes of the blood.

Deutsches Archiv für klinische Medizin, Berlin

187:225-352 (March) 1941

- Chronic Pure Erythroblastosis of Adults as Leukemia—Parallel Process of Erythrocytic System. L. Heilmeyer and W. Schöner.—p. 225.
Genesis of Glandular Fever Cells (Infectious Mononucleosis) on Basis of Glandular, Sternal and Splenic Punctates. S. Moeschlin.—p. 249.
Comparative Investigations of Felty's Syndrome. J. Cremer.—p. 269.
*Experimental Investigations on Prophylaxis of Heat Disorders. H. Böttner and B. Schlegel.—p. 281.
Enterogenic Tetany. H. W. Hotz.—p. 296.
*Therapy of Malignant Diphtheria: Blood Transfusion or Adrenal Cortex Extract. W. Behr.—p. 310.

Prophylaxis of Heat Disorders.—To determine the efficacy of prophylactic measures against heat disorders, Böttner and Schlegel made experiments on 25 persons. They found that the parenteral administration of adrenal cortex extract prevents, or at least greatly retards, the development of heat exhaustion and heat stroke, because the extract improves the physical heat regulation and stabilizes the circulation. Orally administered extract did not have this effect. Attempts to support a heat impaired circulation with strophanthin and epinephrine failed to produce satisfactory results. The occasionally observed action of strophanthin was of only short duration. In cases of heat convulsion the administration of adrenal cortex extract is not advisable because of the exhaustion of the sodium chloride and water economy. In order to fill the exhausted water and sodium chloride depots, physiologic solution of sodium chloride should be administered. In heat stroke and heat exhaustion, sodium chloride solution was likewise tried. The efficacy, although not always convincing, was evident in some cases.

Therapy of Malignant Diphtheria.—According to Behr, malignant diphtheria differs from the ordinary pharyngeal form in that serum therapy comes generally too late to be effective, the intoxication being severe almost from the onset. Numerous therapeutic measures have been suggested to increase the defense powers of the organism, to aid detoxication and change the reaction. Only two of these are still given serious consideration: (1) blood transfusion and (2) the administration of adrenal cortex extract and ascorbic acid. The author evaluates these methods on the basis of the available literature and of his own observations. He is unable completely to corroborate the highly

favorable experiences with blood transfusion made at other clinics. Its influence on the local process and on the general condition is not convincing. The fulminant course is apparently not arrested; complications are neither prevented nor rendered particularly mild. Late fatalities are not prevented, and the mortality is decreased at the most by 10 to 12 per cent. However, blood transfusion cannot be designated as entirely valueless. Adrenal cortex extract and ascorbic acid are administered not only in order to prevent the adrenocortical insufficiency which threatens, because of the diphtheria toxemia, but to promote detoxication and increase the defense function of the organism by modifying the reticuloendothelial system. Administration of the extract and the acid is intended as a prophylactic and detoxicating measure and as treatment for the circulatory deficiency, because it is thought that adrenocortical insufficiency is an important factor in diphtheritic circulatory impairment. Adrenal cortex extract and ascorbic acid were administered to 29 patients with malignant diphtheria (extremely severe in 20 and moderately severe in 9). Even large doses and early application did not reliably arrest the fulminant course. Complications were not prevented. Fatality rates reached 55 per cent in the cases of severest diphtheria. The combined use of blood transfusion and medication with adrenal cortex extract and ascorbic acid however, is most promising in the severest forms of diphtheria. This combination treatment seems to render the diphtheria milder and to arrest the fulminant course.

Zeitschrift für Orthopädie, Stuttgart

71:129-204 (July 23) 1940. Partial Index

- Orthopedic Investigations on Twins. I. Kopits.—p. 130.
Treatment of Habitual Dislocation of Shoulder. J. Janěk.—p. 167.
*Inflammatory Lordosis. G. Schramm.—p. 172.

Inflammatory Lordosis.—Schramm directs attention to unilateral inflammatory changes of bone on articular processes of the lumbar vertebral column as a cause of severe motor disturbances. A tabular report summarizes the chief aspects of all 7 cases so far reported. The disorder occurs in children of the prepuberal or the early puberal age. It is noteworthy that the process is always localized in the two lowest lumbar vertebrae. Infections seem to play a part in causation. The fact that in Storck's case roentgenoscopy gave negative results is of no particular significance in view of the fact that in 2 of the author's cases the clinical symptoms preceded the positive roentgenologic aspects by a year. The author agrees with Hohmann that the limitation of the movement of the lumbar vertebral column is the result of a reflex contracture of the muscles in the region of the diseased vertebrae. Discussing the treatment he says that immobilizing and relieving measures not only are entirely worthless but even exert an unfavorable effect. In cases in which roentgenoscopy discloses severe changes, Hohmann's operation (removal of diseased bone tissue and fastening of a piece of the tibia to the spinal processes of the lumbar vertebrae) is the method of choice. In cases in which a negative result of roentgenoscopy indicates the absence of serious changes of bone, stretching of the shrunken sacrospinal musculature may overcome the fixation of the lumbar lordosis. A mild form of chronic osteomyelitis of the vertebral arches and articular processes was found to be the cause of the fixed lordosis in 4 cases, and so the author suggests the term inflammatory lordosis.

71:205-288 (Sept. 27) 1940. Partial Index

- Sprengel's Deformity. Rösgen and Ebert.—p. 205.
Etiology and Nature of So-Called Vertebra Plana. S. Nagura.—p. 213.
*Early Diagnosis of Tuberculous Coxitis During Childhood. K. Lindemann and A. Dieckvoss.—p. 225.
Surgical Treatment of Certain Forms of Arthrosis Deformans of Hip Joint. M. Hackenbroch.—p. 238.

Tuberculous Coxitis During Childhood.—Lindemann and Dieckvoss point out that roentgenoscopy during the early stages of tuberculous coxitis in children regularly discloses, besides atrophy of the juxta-articular osseous tissues, an enlargement of the nucleus of the femoral head epiphysis. This enlargement is not simulated by projection but is real, resulting from increased endochondral growth in connection with the chronic inflammation of the joint. The demonstration of this enlargement in the stage of the disease before the tuberculous destruction can be observed facilitates the early diagnosis of tuberculous coxitis in children.

Folia Pharmacologica Japonica, Kyoto**32:393-548 (Aug.) 1941. Partial Index**

*Influence of Pilocarpine on the Glutathione Content of Blood, Liver and Spleen. N. Izaki.—p. 503.

*Concerning the Effect of Histamine on Blood Vessels. S. Yoneda.—p. 519.

Pilocarpine and Glutathione.—Izaki reports that small doses of pilocarpine injected subcutaneously depress the reduced glutathione in the blood, liver and spleen but elevate the concentration of oxidized glutathione. When larger doses are given the reduced glutathione decreases slightly, while the oxidized and total glutathione contents are depressed considerably. This latter effect of pilocarpine is inhibited when atropine or scopolamine is simultaneously administered; phenobarbital exerts no such noticeable influence. Large doses of pilocarpine cause an increase of the glutathione in the liver and the spleen. When atropine or scopolamine is given with pilocarpine the action of glutathione in the spleen is inhibited; atropine inhibits the oxidized form of glutathione in the liver, and scopolamine acts on the reduced form. While phenobarbital causes a great acceleration of the reduced glutathione action in the spleen and liver its effect on the oxidized form is inhibitory. From these results it may be inferred that the influence of pilocarpine on the glutathione action of the blood, spleen and liver is intimately related to stimulation of the peripheral sympathetic system; this action involves stimulation of the centers in the midbrain.

Effect of Histamine on Blood Vessels.—Yoneda reports perfusion experiments on the effect of histamine on the blood vessels of intact dogs under urethane anesthesia and of excised organs. The most noticeable result under these conditions was the dilator effect of histamine in small doses and its constricting effect in larger doses. The dilatation of vessels seemed most pronounced in the capillary areas, but similar effects were observed in the arteries and veins, uninfluenced by the autonomic nervous system. Since the action of histamine does not appear to depend on the presence of muscle fibers on the walls of these vessels, its effect presumably involves a direct action on the vascular endothelium. Its constricting effect is most pronounced in the experiment of the perfusion of excised organs, the effect becoming more and more noticeable as the perfusion progresses, particularly in vessels of the intestine.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia**81:1893-1948 (Sept. 9) 1941. Partial Index**

Hepatic Abscess in the Tropics. W. M. Pruys.—p. 1894.

*Culture of Rickettsias in Duck Eggs. R. Gispén.—p. 1907.

Fatal Poisoning by Bite of Sea Snake (*Enhydryna Schistosoma* [Daudin]). H. Bokma.—p. 1926.

Culture of Rickettsias in Duck Eggs.—Gispén employed duck eggs in the culture of rickettsias and viruses. It was found that the chorioallantois of duck eggs is quite suitable for the culture of viruses and rickettsias. The use of duck eggs has several advantages over the use of hen eggs: The duck embryo is more viable under laboratory conditions; virus infection kills it less rapidly; its incubation requires twenty-six or twenty-seven days, that is, five days longer than the chicken embryo's; the egg membrane available for inoculation is larger and thus produces a larger quantity of virulent material. Scrub typhus rickettsias and Sumatran mite fever rickettsias, which failed to grow in hen eggs, were readily propagated on the chorioallantois of duck eggs.

Acta Tuberculosea Scandinavica, Copenhagen**15:257-396 (Nos. 3-4) 1941**

Distribution According to Age of 5,000 Hospitalized Pleuritic Patients in Göteborg in Course of Last Forty Years. A. F. Vjén.—p. 257.

*Comparative Studies on Late Results Obtained in Cavernous Phthisis by Conservative Treatment and by Pneumothorax Therapy. S. Cold.—p. 282.

Importance of Vitamin Treatment, Particularly by Ascorbic Acid in Sanocrysin Therapy of Tuberculosis. K. Secher.—p. 321.

Efficacy of Sanocrysin Therapy. K. Secher.—p. 335.

*Relation Between Primary Infection and Destructive Pulmonary Tuberculosis. K. Isager.—p. 354.

Significance of Increased Exposure to Infection with Tubercle Bacilli: Comparative Studies on Medical and Polytechnical Students. J. Holm.—p. 370.

Conservative Treatment and Pneumothorax in Cavernous Phthisis.—Cold compared two groups of patients with recent unilateral cavernous pulmonary tuberculosis which show practically complete conformity with regard to sex, age, dura-

tion of symptoms, temperature, extension and density of process, size and number of cavities, location of cavities, degree of expectoration, sedimentation rate, the hospital in which they were treated and the period of observation. One of these groups was given pneumothorax therapy while the other one was under conservative treatment with ordinary sanatorium care. The comparison demonstrates the superiority of the pneumothorax treatment. In patients with extremely dense infiltration the results are poor with either form of treatment. The more the cavity dominates the clinical picture, the more valuable is the pneumothorax treatment. In the presence of small cavities, pneumothorax produces cure in 79 per cent of the patients, conservative treatment in only 65 per cent. If the cavities are large (more than 3 cm.) pneumothorax produces favorable results in 74 per cent, conservative treatment in only 33 per cent. The results are best in patients with adhesion-free pneumothorax, but even in the presence of nondivided adhesions and large cavities the results are decidedly better with pneumothorax therapy than with conservative treatment. In patients with recent not entirely unilateral cavernous tuberculosis and in those with the disease in chronic form the results of pneumothorax are far worse than in patients with recent unilateral cavernous tuberculosis. The results of pneumothorax are not much better in these patients than are those of conservative treatment.

Primary Pulmonary Tuberculosis.—Isager discusses the problem of primary tuberculous infection and its ultimate evolution. His observations, which were made in a dispensary of northern Jutland (Denmark), concerned one series of persons selected from a tuberculous milieu and another group of infected persons whose environment was free from tuberculosis. From tuberculous environments he selected 100 subjects, 75 of whom were less than 15 and 25 of whom were over 15. Generally the tuberculous infection had its source in the family, but in some cases it had taken place during a stay with a family in which there were persons with tuberculosis. It was found that the morbidity of primary infection is great in a tuberculous environment, particularly in persons over 15, of whom almost one third (8 of 25) became ill, whereas of 75 under 15 years only 12 became ill. The author also made studies on students who came from nontuberculous surroundings. Their ages varied from 8 to 20 and were about the same as were those in the first group. Of 613 students who had had a negative Mantoux reaction during the first examination 169 gave a positive one the following year, but none of those who had a primary infection showed signs of impaired health and none had pleurisy or erythema nodosum. The author concludes from these two series of examinations that the fact of being infected by living in a tuberculous environment or of being infected by a momentary contact plays an important part in the morbidity of infection. He further analyzes a series of 100 patients with destructive pulmonary tuberculosis, all of whom had tubercle bacilli in the sputum. The majority were between 15 and 45. Open pulmonary tuberculosis developed in 5 of them directly after erythema nodosum, and from this it is assumed that the open pulmonary tuberculosis developed rapidly after a primary infection. In 4 others the open pulmonary tuberculosis appeared after pleurisy. In 1 sign of a primary infection were discovered in the course of influenza which developed several months after the patient had stayed with a family of which a member had open pulmonary tuberculosis. In the other 90 patients the roentgenogram revealed nothing about the primary infection, but the histories provided some information. In persons with a familial infection, and particularly in married couples, the disease seems to manifest itself as follows: If the disease does not appear in the exposed person within a short time after the onset in the diseased person, the chances of infection decrease more and more. The same principle holds for persons working in tuberculosis hospitals or sanatoriums. The observations seem to support the opinion that destructive pulmonary tuberculosis develops to a large extent during the first years after the primary infection.

Book Notices

A Manual of the Treatment of Fractures. By John A. Caldwell, M.D., Professor of Clinical Surgery, College of Medicine, University of Cincinnati, Cincinnati. Cloth. Price, \$3.50. Pp. 150, with 76 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

In sixteen short chapters everything that is essential in the treatment of fractures is said clearly and concisely. Three chapters are taken up by general discussion on the subjects of repair, diagnostics, traction methods, splinting, anesthesia, compound fracture treatment and wound infection. They are short but unusually comprehensive. The entire field of fractures and dislocations is covered. Particularly recommended are the chapters on fractures of the humerus, the chapter on the wrist and fingers, the chapters on the pelvis and on the neck of the femur, the latter being treated with great clearness in ten short pages; the chapter on the foot and the ankle, including the fracture of the os calcis, and the chapter on injuries of the spine. They are all handled with great precision, and the style is clear and easy without being too pithy or epigrammatic. The didactic value of the book is enhanced by the fact that it makes use of the displays and posters of the primer on fractures issued by the Cooperative Committee on Fractures of the American Medical Association. Another important feature is that the illustrations are all diagrammatic and highly instructive. There is no space wasted on individual reports or roentgenograms of end results. In that respect the book may appear impersonal, but the reader cannot help but feel the powerful drive of an experienced pedagogue on fractures. It shows that almost all that is necessary can be said in a short space without the appearance of haste or hurry. It cannot be too highly recommended for the younger man who is at the beginning of his fracture career, though it must be of profit to all who read it.

The Foot and Ankle: Their Injuries, Diseases, Deformities and Disabilities with Special Application to Military Practice. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School, Chicago. Second edition. Cloth. Price, \$9. Pp. 665, with 304 illustrations; Line drawings by Harold Laufman, M.D. Philadelphia: Lea & Febiger, 1941.

The second edition of Dr. Lewin's book gives one a convincing feeling that the contents cover every phase of the potential derangements of the foot and ankle. One of the features is the emphasis on the relation between localized conditions and systemic lesions. Repeatedly the author correlates disturbances of the foot and ankle with disease found elsewhere in the body. Much space, nearly one fifth of the book, is devoted to the essentials of the anatomy, physiology and biomechanics of the foot and ankle, the basic principles underlying foot and ankle derangements and the principles of surgical treatment, and to the various types of modalities utilized in conservative therapy alone or in association with surgical work, not omitting an appreciation of the psychologic upsets that are often concomitants of injury or disease, particularly in so-called medicolegal problems. This preparatory review is so thorough that the understanding of the etiology, pathology and therapy of deformities, diseases and injuries of the foot and ankle is greatly facilitated.

The author deserves much credit for his careful selection of the illustrations. The photographs, roentgenograms and especially the line drawings always clearly and effectively depict what is discussed in the text. The numerous charts on etiology, symptomatology and differential diagnosis are exceedingly helpful in visualizing, crystallizing and establishing a lasting impression of the variety of causes and lesions under discussion. A most valuable feature of the book lies in the description of what would generally be considered minor details, such as how to strap an ankle, how to make a plaster of paris bandage, how to measure for crutches and how to teach their use, the construction and fit of shoes and the hygiene of the feet. The author has enriched the book vastly by giving the details of minor practical, but invaluable, points relative to the examinations and treatment which he has obtained from his extensive personal experience.

The simple and lucid presentation of the management of paralytic disturbances of the foot and ankle, the emphasis on

the care and treatment of peripheral vascular diseases and his thoughtful consideration of diabetic gangrene with the carefully detailed recommendations as to preoperative and postoperative medication merit special mention. There is an informative section on amputations, with a definition of the different types, their indications and the sites of election for different stages of disease. In the chapter on the military aspects of the foot and ankle the author thoroughly reviews the common disorders of the feet—not diseases—and their care, and he gives much useful common sense advice, valuable to the soldier but no less to the civilian. The author pays particular attention to the foot problems of modern warfare as now experienced by the European countries and discusses prophylaxis and treatment, not omitting the lessons which were learned by others and also by himself as a participant in the first world war.

Endocrinologia clinica. Por Aulo Pinto Viégas. Paper, 45 milreis. Pp. 292, with 53 illustrations. Belo Horizonte: Livraria Editora Paulo Blum, 1941.

This volume is a textbook on clinical endocrinology produced by a clinician from one of the medical schools in Brazil. It is liberally illustrated not only with photographs of cases and tissues but with case records from the author's practice. In general it represents a laudable attempt to produce a systematic discussion of clinical endocrine disturbances with an understanding of anatomy, physiology, chemistry and pathology as the background for rational therapy. Liberal citations from the literature not only of Brazil and other South American countries but from the literature of North America and Europe are to be found chapter by chapter. The author is evidently alert to the problems which have been intensively discussed within the last year or two by endocrinologists and other clinicians.

A few criticisms of the book will illustrate the type of difficulty that may be encountered. In several places there are confusions about the exact authors concerned with work when the spellings of authors' names are too nearly alike. These spellings in foreign languages often contribute difficulty, and the same problem exists with some technical words. The reviewer is tempted to suggest that proof reading was not careful enough. The author also has shown slight confusion about the physiologic significance of such materials as the pressor and oxytocic factors in the posterior pituitary.

In many places one finds laboratory results given with too many significant figures. So, for example, the height of human beings is recorded in terms of millimeters, where centimeters is probably the smallest unit which should be employed. The reporting of basal metabolism tests is down to tenths of 1 per cent when the method is not accurate to less than 3 or 4 per cent. In several cases the diagnosis of hypothyroidism appears to be based on too little evidence, since the basal metabolic rate is not below normal and the cholesterol values are not nearly outside the normal range of variations quoted by the author or known by others. There is also confusion of cretinism and juvenile myxedema.

A chapter on diabetes is contributed by another, Dr. O. Moreira, who follows essentially the pattern of Dr. Joslin in his methods of management. Details of diabetic therapy are not made clear, and the author takes the stand that protamine zinc insulin should not be used in complicated diabetes or for patients who have already begun the use of standard insulin. With this, most physicians would now disagree. The author also gives assent to a generalization which is unjustified, namely that the hypoglycemic reactions to protamine zinc insulin and standard insulin differ qualitatively and uniformly.

In the discussion of obesity the author tends to assume hypothyroidism without adequate evidence in some cases. In his plans of a diet for pregnancy to prevent excessive weight in the infant he gives what any one would consider an inadequate diet for the sake of the mother, and in the discussion of dinitrophenol he considers it harmless and a useful substitute during rest periods from the employment of thyroid. These conclusions would not be considered rational at present. He feels that the diencephalic factors in obesity are probably secondary to endocrine control but gives no evidence for this point.

In a final chapter listing many commercial preparations, it is obvious that the listing is far from complete and therefore misleading, and also that the strength of the materials is not indi-

cated with dependable detail so that one can tell what type of unit one is using. There is some discrimination about these matters, but it is far from being uniformly helpful. The author has had almost no experience with diethylstilbestrol and does not recommend it. He makes no distinction between gonadotropic preparations made from chorionic sources or from the genuine pituitary or from pregnant mare's serum. There has also been no distinction made between thyroid of different types of standardization. In spite of these criticisms the book is to be commended, and it is hoped that future editions will correct many of these details.

The Chemistry of Organic Medicinal Products. By Glenn L. Jenkins, Ph.D., Dean and Professor of Pharmaceutical Chemistry, School of Pharmacy, Purdue University, Lafayette, and Walter H. Hartung, Professor of Pharmaceutical Chemistry, School of Pharmacy, the University of Maryland, Baltimore. Paper. Price \$3.80. Pp. 457. St. Louis: John S. Swift Co., Inc., 1941.

This planographed volume represents an attempt to organize the organic medicinal compounds according to the accepted scheme of chemical classification. Written for students who have had basic courses in chemistry and who are interested in the chemistry of medicinal and related products, it is intended primarily, according to the authors, for use by students in the more advanced courses in pharmacy. The fifteen chapters, which are on hydrocarbons, halogenated hydrocarbons, hydroxyl derivatives of hydrocarbons, ethers and peroxides, the carbonyl group, the carboxyl group, natural mixtures, amines, cyanides and nitro compounds, sulfur compounds, phosphorus, arsenic and antimony compounds, metallic derivatives of organic compounds, heterocycles containing one heteroatom, heterocycles containing two or more heteroatoms, and stereoisomerism, discuss the chemistry of methods of preparation, properties and descriptions of the more important compounds. In addition to presenting short dissertations on uses and modes of administration, the authors have correlated physiologic activity and chemical structure wherever there are sufficient data. Preceding the general subject matter is a list of references to published studies on general chemistry, organic medicinal products, chemotherapy, phytochemistry, alkaloids, vitamins, enzymes, pharmacology and therapeutics and other subjects. The authors have exercised good judgment in this list, in view of the scope of their book, and present a useful feature. Minor errors and erroneous therapeutic implications, especially noticeable in the sections pertaining to the sex hormones and the sulfonamides, permit acquiescence to the authors' prefatory statement "The work is not exhaustive and no claim of perfection is made." However, subsequent issues of the book will probably possess the necessary corrections and will be looked on as useful and practical additions to the literature on organic chemical compounds used in medicine.

Gynecology and Female Endocrinology. By Emil Norak, A.B., M.D., D.Sc., Associate in Gynecology, The Johns Hopkins Medical School Baltimore. Cloth. Price, \$10. Pp. 605, with 425 illustrations. Boston: Little, Brown & Company, 1941.

The combined title is used by the author because female endocrinology is now an integral and important part of gynecology. Operative technic is entirely omitted because the great majority of readers of textbooks on gynecology are not interested in the details of operations. On the other hand, diagnosis and treatment are accentuated as Novak believes most readers would wish. Functional disorders including especially the large group of gynecologic endocrinopathies are treated elaborately. The material in the book is based on the author's extensive experience as a teacher, pathologist and practicing gynecologist. The style of writing is, as always, interesting, instructive and to the point. The sections on pathology are worthy of special emphasis, but this is to be expected because Novak is one of the foremost gynecologic pathologists in the world. The illustrations are magnificent and many are in color. At the end of each chapter is a selected list of references, which were chosen with excellent judgment. Every gynecologist should be familiar with the contents of this book. Likewise every physician who treats women should have a copy of this book. Novak is to be congratulated on the excellence of the book. Likewise the publishers are to be commended for having carried out their part so well.

- A Study of the Public Mental Hospitals of the United States 1937-39. By Samuel W. Hamilton, M.D., Grover A. Kempf, M.D., Grace C. Scholz and Eve G. Caswell. United States Public Health Service Associated with the Mental Hospital Survey Committee. Federal Security Agency, United States Public Health Service. Supplement No. 164 to the Public Health Reports. Paper. Price, 20 cents. Pp. 126. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

The Mental Hospital Survey Committee was composed of Drs. Walter L. Treadway, S. Spafford Ackerly, Louis Casamajor, Ross McC. Chapman, Franklin G. Ebaugh, Clarence M. Hincks, J. Allen Jackson, Lawrence Kolb, Bernard T. McGhie, Arthur P. Noyes, Winfred Overholser, Frederick W. Parsons, Arthur H. Ruggles, William L. Russell and H. Douglas Singer. The results accomplished by the survey and published in this valuable report are best described briefly in the committee's own statement of purpose:

The purposes of the survey were (1) to determine the status of the administrative organizations in various political jurisdictions and the functions which they actually perform; (2) to inform interested public officials about the standards prevailing in different states; (3) to evaluate the adequacy or suitability of institutional structures and equipment; (4) to study the adequacy of professional, subprofessional and technical personnel; (5) to acquaint those working in the hospital field with what is being done in various institutions; (6) to evaluate the educational facilities for the training of resident physicians; (7) to ascertain the measures and facilities for conduct of research; (8) to present to the medical profession a statement of the public facilities and provisions for meeting the needs of the mentally ill.

Under "Origin of Survey" is the significant statement that:

In 1936 three agencies, the American Psychiatric Association, the National Committee for Mental Hygiene and the United States Public Health Service, joined forces and projected a continent wide survey of mental hospitals. The interest and active support of several other organizations were at once enlisted. These were the American Medical Association, the American Board of Psychiatry and Neurology, the American Neurological Association, the Canadian National Committee for Mental Hygiene and the Canadian Medical Association. A joint Survey Committee was set up and at various points collaboration with the several staffs was developed, especially with the Council on Medical Education and Hospitals of the American Medical Association.

All physicians and others who are interested in the purpose and work of public mental hospitals in the United States will find this report most informative and comprehensive. The unusually clear outline and concise style makes its vast and varied data readily accessible.

Desarrollo del sistema de conducción atrio-ventricular. Por Italo Roberto Calcagno. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Escuela de medicina. Paper. Pp. 130, with 44 illustrations. Buenos Aires: A. Guidi Buffarini, 1941.

This monograph in Spanish, with an English summary, presents a review of the literature on the development of the auriculoventricular conduction system in addition to the author's own work on the calf embryo from 4 to 70 mm., based on complete serial sections of the heart. There is a comprehensive bibliography. The author points out that, as the cardiac tube and the constrictions that mark the different cavities appear, the ventricular myocardium is formed by a layer of compact tissue. This gives rise to a series of buds tending to form a second spongy internal layer. At the level of the auriculoventricular canal the outer and inner layers of the musculature are separated by a groove transforming the musculature of the canal into two tubes. The outer tube disappears completely when the pericardial mesenchyme invades this groove, leaving the internal tube as the only muscular connection between the auricular and ventricular cavities. It is from this muscular tube that the auriculoventricular conduction elements are formed. The auriculoventricular node arises in the form of a plate from the posterior part of the musculature; later, at the time that the septum intermedium appears, it is transformed into a ventrally displaced nucleus. The common auriculoventricular bundle and its two branches arise from the spongy musculature of the ventricle at the time the interventricular septum begins and they are moved upward as the septum grows, riding the top of the septum. Just before the interventricular septum fuses with the septum intermedium the auriculoventricular bundle consists of a nucleus of large clear cells, forming trabeculae. When the intermediate and interventricular septum

fuse, the common auriculoventricular bundle and the auriculoventricular node come in contact and become connected, each retaining its characteristic structure. Part of the spongy tissue of the ventricular cavity fuses with the septums and is transformed into the Purkinje elements of the peripheral network.

O método de Meduna em esquizofrênicos crônicos. Por Aníbal Silveira, psiquiatra do Hospital de Juqueri. Tese de concurso à docência livre de Clínica psiquiátrica na Faculdade de medicina da Universidade de São Paulo. Paper. Pp. 150, with 14 illustrations. Juqueri, São Paulo: Oficinas Gráficas do Serviço de Assistência a Psicopatas, 1941.

This monograph is a needed contribution on metrazol convulsive therapy of chronic schizophrenia. A review of the present status of convulsion therapy is given in the introduction. There are six chapters. The first discusses the concept of schizophrenia with a critical analysis of all the diverse opinions. The second includes a detailed description of the technic of convulsive therapy employed by the author with the contraindications. The third part considers the clinical aspects of schizophrenia with a critical analysis of the forms of therapy. The fourth chapter discusses the various types of schizophrenia treated by convulsive procedure. The fifth chapter describes the experiences of the author in his cases. The sixth chapter compares the author's results with those of other authors. The book was written by the author as partial fulfillment of "venia legendi" in the Faculty of Medicine, São Paulo State University, Brazil. There is a detailed bibliography containing four hundred and twenty-one references. This book is recommended to all psychiatrists and neurologists.

Lecciones clínicas de medicina oftalmológica. Por el Dr. Carlos Charlin C., profesor de clínica oftalmológica. Cloth. Pp. 381, with 68 illustrations. Santiago de Chile: Ediciones Ercilla, 1941.

This collection of thirty short essays on various aspects of medical ophthalmology are in the form of reports of undergraduate clinics held by the author in the university clinic. They deal with the more or less unusual ocular conditions that are based on systemic disturbances such as the ophthalmic complications of various forms of avitaminosis, the ocular hysterias and the fundus changes of diabetes and arterial hypertension. Tuberculosis plays quite a role, as does malnutrition in the causation of ocular disease in Chile. Apparently the disease conditions encountered in the Chilean clinics varies considerably from those ordinarily encountered in the charity clinics of this country. In a short review of this character it is obviously impossible to deal with the particular points of each essay, but in general it may be said that the subject material of the book is presented particularly for the undergraduate or the beginning graduate student. In its make-up the volume is essentially French in character, although the printing is better than the usual Gallic form. The black and white illustrations leave much to be desired. The concluding chapter is a study of the personality of Pasteur, evidently the author's hero.

Cardiac Clinics: A Mayo Clinic Monograph. By Fredrick A. Willius, B.S., M.D., M.S. in Med., Head of Section of Cardiology, Mayo Clinic, Rochester, Minn. Cloth. Price, \$4. Pp. 276, with 35 illustrations. St. Louis: C. V. Mosby Company, 1941.

The appearance in a single volume of lectures previously scattered in the various issues of the Proceedings of the Mayo Clinic is welcome. The author's aim, as he states in his foreword, is to present a practical discussion of the heart intended for the busy general practitioner. The volume contains a combination of case reports and short philosophical dissertations on the various aspects of heart disease. The busy practitioner should find this volume valuable especially for the general admonitions. The presentation of case reports is instructive since, unlike the ordinary textbook style, this permits the discussion of individual cases and avoids the presentation of average patterns. In the author's endeavor to meet the needs of the practitioner, some of his interpretations of mechanisms are oversimplified. Nevertheless this, by avoiding polemics, offers a usable interpretation of clinical phenomena on which the findings may be fixed in the reader's mind. The general philosophic aspects are pointed and apropos and make delightful reading. This book fulfils the purpose intended by its author.

Nutrition in Health and Disease. By Lenna F. Cooper, B.S., M.A., M.H.E., Chief, Department of Nutrition, Montefiore Hospital, New York City, Edith M. Barber, B.S., M.S., Lecturer on History of Cookery, Teachers College, Columbia University, New York, and Helen S. Mitchell, B.A., Ph.D., Director of Nutrition on the Staff of the Coordinator of Health, Welfare and Related Defense Activities Federal Security Agency. Eighth edition. Cloth. Price, \$3.50. Pp. 709, with 102 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

This is the eighth edition of a book which has earned for itself a place as a reliable textbook in this field. The present edition is brought up to date by inclusion of the standards recently adopted by the Committee on Foods and Nutrition of the National Research Council. There are also improvements from the point of view of new special diets and an extended study of dietary habits according to racial groups. All of the authors concerned are at present occupying positions of importance in relationship to nutrition and the national defense.

Sinus. By Russell Clark Grove, M.D. Cloth. Price, \$2. Pp. 165, with 16 illustrations. New York: Alfred A. Knopf, 1941.

This small work is intended chiefly for the intelligent lay reader. Medical students and general practitioners would find it interesting and valuable reading. Informative and authoritative, it tells its story in plain language and drives the lesson home still further by simple drawings and reproductions of roentgenograms. Starting with a discussion of important anatomic and physiologic data concerning the accessory nasal sinuses, the author devotes the remainder of the book to a detailed account of various disease conditions of these cavities. Popular fallacies are exploded, self medication is warned against and the necessity for proper medical attention is stressed. This work is in line with proper efforts of the profession to inform, in an adequately guarded manner, lay persons seeking enlightenment on various things medical.

America's Nutrition Primer: What to Eat and Why. By Eleanor Sense. Introduction by Dr. E. V. McCollum. Cloth. Price, \$1. Pp. 95, with illustrations by the Author. New York: M. Barrows & Company, Incorporated, 1941.

Here is a collection of a few thousand words on the basic facts about the purchase and uses of food, with some "budget saver" menus, some recipes and rules. The author is a professional dietician who has been lecturing on food and nutrition throughout the nation. Most of the material submitted is quite accurate and perhaps constitutes about all that the average housewife can learn easily. There are, however, many much more complete books easily available at the same price.

Instructions in Laboratory Work in Bacteriology for Students in Professional Schools. Department of Bacteriology, University of California Medical School, San Francisco. Second edition. Paper. Pp. 147. San Francisco: J. W. Stacey, Inc., 1941.

This syllabus was prepared from sets of directions furnished to students in medicine, dentistry, pharmacy, advanced bacteriology and nursing over a period of many years. Some two hundred and fifty-six experiments are given and certain of these are assigned to meet the needs of the class in question. To this edition questions have been added which are of two types, one to stimulate the habit of analyzing experiments, the other to provide a connecting link between fields of medicine and public health and experimental procedures. The syllabus is well indexed and directions are given on the left page, leaving the right one blank for student notes. This book should prove useful to the student taking laboratory work in bacteriology.

Entre cirujanos y hospitales. Por el Dr. Jose Castro Villagrana. Paper. Pp. 201. Mexico, D. F.: The Author, 1940.

This is a travelogue depicting various medical centers of the world. It sketches the scenes and atmosphere surrounding various men whom the writer has chosen to depict. The author is much impressed with the work of Böhrer of Vienna. In Munich he was much impressed with Drs. Kreuz and Keysser as well as the institutes at Hamburg and Dresden and Bayers' chemical works in Lieverkussen. Those who enjoy beautiful Spanish phraseology will like this book.

Sex Life in Babylonia. By Edwin W. Hirsch, M.D. Cloth. Price, \$2. Pp. 38. Chicago: Research Publications, 1941.

This is a superficial review of a subject on which much has been written previously. The essay first appeared in the *Urologic and Cutaneous Review*.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FOOT STRAIN

To the Editor:—A laborer aged 25 gave a history of working in a factory the floors of which were hard cement. He had been working for about two weeks when his feet became so tender that he could do this work no longer. He also said that a piece of timber had fallen and struck him on one heel. There were two large calluses, one on each heel. One of the calluses was grooved horizontally. The main question I am interested in is the fact that there were about a dozen reddened nodules on the sides of his feet about the size of a large pea, some being larger. These were tender. What were they? Also should calluses on heels be removed surgically? After he had been a few weeks off his feet, the nodules disappeared. There were also cramps of the calves of legs extending to a short distance below the knees. This condition is still present and has existed over a period of three months.

C. L. Percy, M.D., Salem, W. Va.

ANSWER.—This patient's history is typical of strain of the feet. In such cases pain in the foot frequently is in the region of the navicular and talus articulation, although pain in the heel is not infrequent, particularly at the point where the plantar aponeurosis attaches into the calcaneus. The muscle spasm in the calves of the legs is a symptom of foot strain and muscular insufficiency. The pea sized nodules as described are seen in cases of foot strain and are due to inflammatory reaction in the subcutaneous tissue. The inflammation subsides with rest. Hot packs and rest will help relieve the muscle spasm in the legs. The calluses on the heels are usually due to faulty weight bearing, which, with a history of foot strain, suggests the presence of a pes valgoplanus. The calluses should not be removed surgically. They will disappear if the cause is removed and would recur even if removed surgically unless the underlying causative factors were cured.

Elevation of the feet with hot packs and rest allays the acute symptoms. The decompensation can be combated by means of adhesive strapping with the heel in varus and the anterior part of the foot in pronation. Correction can be maintained by means of corrective shoes. The heel should be held in varus by raising the inner side of the heel of the shoe, and the anterior part of the foot should be brought into pronation. This can be accomplished by means of the comma shaped bar.

Reference:

Hauser, E. D. W.: Diseases of the Foot, Philadelphia and London, W. B. Saunders Company, 1939, chapter on Pes Valgoplanus.

TERTIARY SYPHILIS

To the Editor:—A Negro aged 35 presented himself in the office two months ago with four typical gummatous ulcers on his left leg and foot. The Hinton test was positive. The patient was mentally and physically well developed. His pupils were equal and reacted well. The teeth were normal. There was no evidence of disease of any internal organ. The ulcers, which had been existing for five months (the patient had been treated under an erroneous diagnosis elsewhere), healed within two weeks under preparations of bismuth and iodine and local application of mercury ointment. Neosphenamine, however, is poorly tolerated (diarrhea). I wonder how long treatment should be continued, as many authorities say that no cure can be achieved in the third stage of this type. An interesting aspect is the patient's father, who is white except for Addison-like spots on the cheeks and has typical Negroid features. The man asserts that he had the ordinary Negro color until about seven years ago, when he was stricken with a severe disease connected with high fever. It is to this disease that he ascribes the loss of his color. This seems highly improbable to me but the man is intelligent and educated, and, on the other hand, I do not have much experience with Negroes. I would appreciate your opinion as to both questions.

M.D., Massachusetts.

ANSWER.—No information is furnished on this patient as to a careful check-up of the central nervous system, including a lumbar puncture. Moreover, because of the frequency of cardiovascular syphilis in a Negro it would be well to have the heart gone over carefully not only from the standpoint of physical examination but also radiographically. It is unwise in such a late case of syphilis to employ arsenical therapy in the beginning. It would be much better to keep the patient on bismuth therapy and potassium iodide for at least twelve weeks, giving an intramuscular injection of bismuth subsalicylate 1 cc. in the alternate buttocks until he has had twelve of them. Then one might try an arsenical cautiously, provided there is no involvement of the cardiovascular apparatus, starting him off with a

small dose of mapharsen, e. g. 10 mg. intravenously, and if he stands it all right gradually increasing it up to a maximum dose of 60 mg., giving the injections once a week for a series of ten injections. Thereafter, if he stands the therapy well, one may alternate the bismuth injections and the arsenical injections until he has had thirty of each. In the succeeding year he may have two courses of bismuth with a rest period. Naturally, in the beginning no rest periods are allowed. With this type of syphilis it probably would be well to give potassium iodide in 0.5 Gm. doses before meals along with the bismuth therapy.

The therapy that is outlined is given on the premise that the patient does not have central nervous system syphilis. Naturally, if the patient has central nervous system syphilis other forms of therapy would be suggested, depending on the findings.

It is judged from the description that the patient's father has vitiligo, which is not an uncommon disease in the Negro. Of course, it has nothing to do with syphilis.

PROBABLE ATYPICAL LYMPHOCYTIC CHORIOMENINGITIS

To the Editor:—A man aged 34 noticed soreness about the back, abdomen and thighs about a month ago. He had some hoarseness of the throat but no fever. He was given respiratory vaccine on the assumption that he was coming down with a cold. The next morning he had a headache of moderate intensity which seemed to center over the left eye. It was accompanied by mild waves of nausea. The skin soreness progressed but there was still no fever. He was given more respiratory vaccine and nasal pack in an effort to get the sinus draining. The headache persisted three days, during which time a moderate amount of clear thick drainage was apparent in the back of the throat. The third day his temperature rose to 99.4 F. By this time the back was getting stiff. Six days after onset the patient noticed that the soles of his feet were numb. This numbness extended part way to the knees. The next day an acute urinary retention developed. A neurologist was called in consultation. The cranial nerves were normal; muscle tone was good; the abdominal reflexes and the right cremasteric were absent; the knee and ankle jerks were hyperactive. The Babinski sign appeared fleetingly on the right side and was gone the next day. There was no ataxia. Vibratory and touch sense were not impaired. The patient was well able to distinguish cold over the entire area involved but he could not distinguish heat on the feet or legs up to the thighs. Lumbar puncture was done ten days after onset and there was no increase of pressure. The Queckenstedt test gave a normal response. In the spinal fluid there were 106 white cells, 88 per cent lymphocytes, 12 per cent polymorphonuclears and protein 56 mg. The colloidal gold curve was flat. The Kohn reaction was negative. Culture of the spinal fluid revealed no disease. The blood pressure was normal. There was no evidence of any other active disease. Please give probable diagnosis, prognosis and treatment. G. W. Brown, M.D., Buchanan, Mich.

ANSWER.—The history up to the time of the lumbar puncture, a period of ten days after the onset of the illness, indicates that the patient was suffering from a subacute infectious disease, most of the symptoms being referable to the central nervous system. The symptoms pointed to involvement of the meninges, the spinal cord and possibly the peripheral nerves, the cerebrum escaping. Many of the symptoms were mild, of a fleeting character and indicated a diffuse or widespread disease. The onset, the course and the symptoms were all characteristic of an invasion of the central nervous system by a neurotropic virus, beginning as a mild infection of the upper respiratory tract with general soreness of the muscles, hoarseness, mild headache, nausea, stiffness of the back and a slight elevation of temperature above normal. These signs were consistent with a type of virus infection known as acute lymphocytic choriomeningitis. The subsequent symptoms, however, would not be considered as typical findings in that disease, for urinary retention, sensory changes in the feet and legs and increased deep reflexes with the Babinski phenomenon point to a lesion of the spinal cord rather than to a disease primarily meningeal in type.

In acute lymphocytic choriomeningitis most of the symptoms can be accounted for on the basis of the meningeal involvement. Cases, however, have been known, and a few have been reported in the literature, indicating that the virus may be somewhat widespread in its action and that the other parts of the nervous system are occasionally involved. In 1 case, the report of which has not yet been published, there were in succession, although occasionally with some overlapping, four primary systems involved: retrobulbar neuritis of the optic nerves, meningitis with encephalitis, transverse myelitis of the spinal cord and peripheral neuritis. Signs and symptoms of all these individual variations were present at one time or another; no syndrome can be considered as exclusively the product of one of the neurotropic viruses.

The findings in the cerebrospinal fluid, moreover, bear out this point. The increased cell count is indicative of a meningeal reaction. The protein, being twice normal, suggests a deeper involvement of the nervous system. When the disease was first reported in adults in this country by Viets and Watts (THE JOURNAL, Nov. 16, 1929, p. 1553) it was thought that polymorphonuclear cells in the cerebrospinal fluid were never enor-

tered. Subsequently the same authors withdrew this opinion, for further study of additional cases (*J. Nerv. & Ment. Dis.* 80:253 [Sept.] 1934) indicated that polymorphonuclear cells, particularly in the first few days of the disease, were not by any means a rarity. The changes, therefore, in the cerebrospinal fluid on the tenth day of this patient's illness would be considered consistent with a diagnosis of acute lymphocytic choriomeningitis. It should be pointed out, however, that except for the negative Kahn reaction the changes in the cerebrospinal fluid would also be consistent with neurosyphilis of the meningeal type. If one should add, moreover, a positive Pandy reaction or find increased globulin in the cerebrospinal fluid by the ammonium sulfate test, the diagnosis of neurosyphilis would be much more certain.

In recent years, valuable new laboratory procedures have been developed for the diagnosis and differentiation of neurotropic virus diseases. Tests are now available on the blood serum for lymphocytic choriomeningitis as well as for various types of encephalitis and poliomyelitis (Laboratory Aids in the Diagnosis of Neurotropic Virus Diseases, Circular Letter 107, Oct. 22, 1941, War Department, Office of the Surgeon General, Washington, D. C.). Examination may also be made of specimens of the nervous system if these become available. For lymphocytic choriomeningitis there are complement fixation and neutralization tests on the blood serum as well as virus studies, which serve to identify the disease.

The prognosis of acute lymphocytic choriomeningitis is good. No death has been reported in an unmistakable case since the identification of the virus by Armstrong (*Pub. Health Rep.* 49:1019 [Aug. 31] 1934). Viets and Warren (*THE JOURNAL*, Jan. 30, 1937, p. 357) reported pathologic observations in a case in which death occurred before the virus identification was known, but this case cannot be considered, in the light of subsequent knowledge, as authentic although the clinical manifestations were suggestive of the disease.

There is no specific treatment. Most patients, however, recover without residual manifestations. The disease may be extremely severe and the outlook for life often appears to be grave during the height of the illness. Most cases, however, are of a mild nature and many probably pass unnoticed or are classified as mild respiratory infections similar to the situation found in other diseases caused by neurotropic viruses such as poliomyelitis. In the present case, because of the myelitis, the prognosis should be somewhat more guarded than in the more typical cases of acute lymphocytic meningitis.

SMALL AIR CONDITIONING UNIT

To the Editor:—Have you any information regarding the installation of a desirable type of air conditioning unit in an operative surgery? Of necessity, this cannot be a built-in unit but must be one to set in or a portable type, as the operating rooms are already built.

R. J. Rorer, M.D., Kokomo, Ind.

ANSWER.—A desirable air conditioning unit for an operative surgery should maintain a maximum temperature of 80 F. with 60 per cent relative humidity when the outside temperature is zero and a minimum of 75 F. with the same humidity when the outside dry bulb is 95 and the wet bulb is 76. These conditions should be maintained with an outside air supply of eight air changes per hour. The unit should have replaceable air filters and means for recirculating air in order to obtain the desired air conditions quickly for emergency operations. It is important that recirculation be shut off completely before the patient is brought into the ward.

A "self-contained," "year-round" room conditioner of this sort is bulky and requires connection to steam, water, drain and electricity. It is usually placed under a window and connected to the outside through the lower part of the window. A spark-proof thermostat and humidistat must be furnished.

A straight-room cooler ("summer air conditioner") is much simpler and can be truly portable, but it lacks the essential feature of humidification and has no provision for warming the outside air supplied in cold weather.

A separate exhaust system is necessary, having a capacity equal to that of the supply system and exhausting the used air, preferably through an adjoining sterilizing room. The exhaust grille may be connected to an existing hospital exhaust, or a propeller exhaust fan may be built into an outside wall, or attached to the upper part of a window. The propeller fan should be equipped with automatic shutters.

The chief disadvantage of self-contained room conditioners is their noise. It would help a great deal if the refrigerating compressor was installed outside the room and the refrigerant piped to the room unit. If several operating rooms are to be conditioned, a central station plant installed in the basement is definitely advantageous.

ATYPICAL MYASTHENIA GRAVIS

To the Editor:—A girl aged 17 years began four years ago to have weakness in her muscles. She swayed on walking, and her arms tired easily. After a ten months rest in bed her strength returned and she was active until January 1940. Then she had the grip, followed in February 1941 by scarlet fever. Since then she has been confined to bed with a return of her previous symptoms of weakness of both legs and arms. Till the onset of these attacks she was in good health. There is no history of muscular weakness in her mother's or father's family. She has three younger siblings, all normal. From February to July her condition remained stationary. She did get out of bed to sit in a chair for half an hour a day, only to return because of being extremely fatigued. In July 1941 she began having a hacking cough. This began in late afternoon. The cough was not relieved by opiates or usual cough syrups. The palate was not long. The only relief was obtained by having her roll over on her stomach. By early morning she could roll over on her back again without coughing, only to begin coughing again in the late afternoon. The hour at which the cough begins has been constant, except that lately it has been somewhat earlier. Coincidentally with the development of the cough she began having an afternoon rise in temperature up to 100.5 F. by mouth. Following the removal of two infected teeth, the temperature returned to normal. A month ago a prostigmine methylsulfate test was negative. That evening she had cramps in the abdomen. Since then she has gagged and had abdominal cramps and fibrillary twitchings of arms and legs. For the past two weeks she has had herpes zoster on her legs, spreading to the trunk and arms. The general skeletal development is good; the muscles are somewhat small; the pulse varies from 80 to 100; the blood pressure is 114 systolic, 70 diastolic. The isthmus of the thyroid gland is palpable. The knee jerks are present but diminished. The Babinski reflex is negative. There are no gross sensory changes. I have considered this to be a case of progressive muscular dystrophy. Is this consistent with the course described? She has had wheat germ oil, 10 drops daily, for two months. A sedative prevents her gagging attacks. What would be the cause of the coughing? Is it usual for patients with dystrophy to have these attacks? What is the prognosis? M.D., New York.

ANSWER.—The patient has in all probability atypical myasthenia gravis (Erb-Goldflam's disease, or pseudobulbar asthenia). Progressive muscular dystrophy produces objective evidence of organic muscular disease such as hypertrophy or atrophy. The cause of the coughing is probable involvement of the chest and throat muscles. It is not common for patients with dystrophy to have attacks of coughing. Myasthenia gravis is a serious ailment and is incurable. The following may be suggested: Give 2 cc. of 1:2,000 solution of prostigmine methylsulfate by hypodermic injection and watch for improvement. This should occur in ten to thirty minutes. Following this one should test a muscle with a faradic current at 75 per cent interruption. After this has been done the tested muscle will cease to react. After a few minutes rest the tested muscle will react again. If these tests are positive, the patient may be placed on either of the following regimens: Ephedrine hydrochloride $\frac{3}{8}$ grain (0.024 Gm.) three times daily with prostigmine bromide (15 mg. tablets three times daily) by mouth. Instead of the ephedrine or prostigmine one may give guanidine hydrochloride in doses of 15 to 30 mg. per kilogram of body weight daily.

PREGNANCY FROM COITUS DURING MENSTRUATION

To the Editor:—The question of whether a woman could become pregnant during her menstrual period has arisen. Manwaring of Stanford reports the discharge as "lethally toxic for normal mature rats." Would not the same effect be applicable to normal sperm?

George K. Herzog, M.D., San Francisco.

ANSWER.—The common aversion to coitus during menstruation is probably based on esthetic reasons rather than on any scientifically demonstrable harmfulness to either partner. There appears to be little evidence as to the effect of the menstrual discharge on the motility or potency of spermatozoa. The well known dictum of Ambroise Paré that coitus during menstruation breeds monsters belongs in the realm of superstition. Gynecologists are inclined to attach less importance than they formerly did to the detrimental influence of cervical and vaginal discharges on the spermatozoa. While it seems theoretically possible that the menstrual discharge would exert an inimical effect, this factor alone could not be considered to exclude absolutely the possibility of impregnation during the period.

Much more important would seem to be the fact that there does not appear to be unimpeachable evidence that ovulation occurs during menstrual periods of normal duration. Regardless of what one may believe as to the value of the so-called safe period in biologic contraception, the evidence indicates that ovulation does not occur sometime within a definite though rather long "ovulation span." This embraces many days, but there does not appear to be definite proof that it has occurred earlier than the eighth day of the cycle, which places it beyond a menstrual period of average duration. The reader may be referred to Hartman's work on "The Time of Ovulation in

Women" for a further discussion of this point. The incompleteness of knowledge on this subject does not justify dogmatic statements, but it seems exceedingly unlikely that coitus during menstruation would be productive.

TONSILLECTOMY IN ALLERGIC OR HAY FEVER PATIENTS

To the Editor—Am I correct in assuming that it is wise to defer until after the hay fever season (ragweed season) the removal of tonsils and adenoids in a child who either is allergic or has a definite family history of allergy? Is there any proof that in patients with a family history of allergy or an allergy themselves definite allergic manifestations develop or become worse after tonsillectomy during the hay fever season, and, if so, what is the explanation or basis for the appearance or exacerbation of the allergy?

Meade Edmunds, M.D., Petersburg, Va.

ANSWER.—Specialists in the field of allergy almost without exception strongly oppose the removal of tonsils and adenoids in a hay fever sufferer during the hay fever season. This is because the tissues are apt to be swollen from the hay fever; secondary infection is more likely to occur because of decreased resistance. Sneezing and coughing increase the danger of post-operative hemorrhage.

Tuft (Clinical Allergy, Philadelphia, W. B. Saunders Company, 1937, p. 373) states: "The relationship of operations on the nose or throat, such as submucous resection or tonsillectomy, to the production of the initial attack of hay fever is difficult to evaluate. The reported instances of hay fever beginning shortly after surgery of this type are too numerous to be coincidental and emphasize the necessity for caution in performing operations on children of allergic parents."

In children who are allergic or whose parents are allergic, cutaneous tests for pollens should be done before any operation on the nose or throat, especially if surgical intervention is contemplated during the three pollen seasons (March to October).

INTRAUTERINE KERATITIS OR BIRTH INJURY OF CORNEA

To the Editor—A white boy aged 2 weeks, whose mother is a primipara was delivered by high forceps. I see no evidence of a direct injury to his eyes. The right cornea is clouded to the extent of making an intra-ocular inspection impossible. The pupil is barely discernible but seems to react normally to light. The anterior chamber is of proper depth. The eyes are of equal and of normal size. There is no evidence of an infection in the cul-de-sacs, iritis or conjunctivitis. The blood Wassermann reaction of both parents and of the baby are negative. Intra-ocular tension is within normal limits. The baby is "normal" in other respects. There is no history of similar mishap in either side of family. I am wondering whether ethylmorphine hydrochloride is safe to use. Could this drug used as drops in the eye cause a possible addiction to morphine? Is there a known treatment that might give a brighter prognosis?

James Hicks, M.D., Brunswick, Ga

ANSWER.—The cloudy cornea may be the result of an intra-uterine keratitis, with or without uveitis, of a birth injury to the cornea or of a keratitis subsequent to birth. In many such instances the corneal opacity clears within the course of six months without treatment. As far as is known, there is no definite treatment that will hasten the process. Ethylmorphine hydrochloride may be used, but present evidence tends to disprove any such definite therapeutic effect of that drug. There is no danger of producing an addiction to morphine by the instillation of ethylmorphine hydrochloride into the conjunctival sac.

MILD GASTROINTESTINAL EPIDEMIC

To the Editor—What are the possible diagnoses in an "epidemic" seen in New York City between Nov. 28 and Dec 9, 1941, and still going on? In many families throughout the city one or two members were stricken with nausea, vomiting, abdominal cramps and borborygmus, followed in twelve to twenty-four hours by a foul smelling diarrhea lasting two or three days. There were neither chills nor fever nor especial weakness. In milder cases only a day's siege of diarrhea would occur. New cases in the family might follow in two days, occasionally three or four, after the first case. In most cases the children were affected first, then their parents. I recall similar outbreaks in past years in the late fall when there was no influenza prevalent. Has a virus gastroenteritis without fever ever been reported?

M D, New York

ANSWER.—It has been observed that during epidemics of influenza, even of the milder types, gastrointestinal symptoms may dominate the clinical picture. As a rule some febrile reaction occurs, but in certain outbreaks fever has been only slight in many cases.

It would seem probable that the etiologic agent in these disorders is a virus. However, the virus in the intestinal tract in these cases has not been demonstrated as far as a careful search of the literature has revealed.

Food poisoning might be responsible for symptoms similar to those observed, although fever is present in most food poisoning outbreaks. Other possible diagnoses are mild specific types of dysentery, which also usually produce some fever in those affected.

It would appear that further research in the epidemic observed in New York would be necessary to determine the exact category in which the disease belongs.

APPETITE AND THE CHILD

To the Editor—A boy aged 5 years has always been a "poor and picky" eater; in spite of this he is in good flesh and normal weight but does seem to catch cold rather easily. As an infant he always took his milk well, but when he began to eat solid foods he would not touch many of them. At present he will eat no meat whatever—"this since he learned where meats came from." Of vegetables he will eat only raw carrots, raw celery and potatoes. He will eat most cereals, on occasional egg, a few desserts, will take his milk freely, and he will take most fruits; but some must be cooked or he will not take them. What would you advise my recommending to the parents?

Raymond H. McPherron, M.D., Chicago

ANSWER.—The parents should be informed that if the child is in good physical condition as stated there is nothing to worry about in his present diet. It covers all the necessary food elements. If this attitude is adopted and no further attention is paid to his eating habits, he will eventually broaden his diet himself. Nursery schools where children are given meals together help in this. A good book for the parents to read is C. A. Aldrich's "Cultivating the Child's Appetite."

TULAREMIA FROM WILD AND TAME RABBITS

To the Editor—During the past ten years I have seen about 18 cases of tularemia which could be traced directly to having cleaned wild rabbits, commonly known as jack rabbits in the Western states. Please let me know if tularemia ever occurs in tame rabbits or in the species of wild rabbits, also found in the Western states, which are known as the cottontail?

A. L. Graff, M.D., Cedar City, Utah

ANSWER.—The wild cottontail rabbit is the most important host and transmitter of tularemia east of the Mississippi River. In the Western states the jack rabbit, cottontail and snow-shoe rabbits are the principal animal hosts. There are no authenticated records of tularemia acquired from contact with domesticated rabbits. Rabbits raised under domestic conditions, although highly susceptible, have not been found naturally infected, probably owing to their freedom from the ticks which commonly infest wild rabbits.

IMMUNIZATIONS FOR EUROPEAN WORK

To the Editor—I have under my care two young men who intend to go to Europe to do war relief work. I wish to immunize these men against typhus and cholera. Can you tell me where in the United States these immunizing agents can be obtained? Are there any immunizations other than typhoid, paratyphoid A and B, smallpox, typhus and cholera which you would recommend?

Lucille Carman, M.D., North Manchester, Ind

ANSWER.—Both typhus and cholera vaccine may be obtained from either the Eli Lilly Company or the Lederle Laboratories at Pearl River, N. Y.

Immunization against typhoid, paratyphoid A and B, smallpox, typhus and cholera protects against those diseases which are of greatest danger.

The efficacy of typhus vaccine in human beings has not been established, but its use is advised.

MIGRAINE, SICK HEADACHES AND FOOD ALLERGY

To the Editor—Approximately 70 per cent of cases of migraine and recurrent headaches are benefited or relieved by the exclusion of allergenic foods from the diet. It is unfortunate, therefore, that the adequate study of food allergy was not stressed in the answer to the query concerning atypical migraine in *The Journal*, July 5, 1941, page 78. Success has long been reported by various allergists with diets excluding foods to which cutaneous reactions or a history of definite idiosyncrasy or dislike occurs. For many years I have relieved the majority of these sufferers with elimination diets modified by a history of possible idiosyncrasies and definite cutaneous reactions by the scratch tests. Such diets should be used as diagnostic tools for the study of possible food allergy. Detailed menus for such diets together with a discussion of their use, necessary recipes and emphasis on the maintenance of nutrition have recently been published in "Elimination Diets and the Patient's Allergies," Philadelphia, Lea & Febiger, 1941. The cyclic recurrence of allergic headaches is usually due to refractoriness, which occurs after many allergic reactions. Anergy or the inability to react allergically explains the relief of allergic migraine during pregnancy, mentioned in the query. The disappearance of asthma and less commonly of other allergic manifestations during gestation is due to the same cause.

Albert H. Powe, M.D., Oakland, Calif

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RATE OF HEMOGLOBIN REGENERATION IN BLOOD DONORS

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AND

ADELAIDE P. BARER, Ph.D.

IOWA CITY

During the past twenty years there has been a great increase in the number of blood transfusions administered, and the recent use of normal and lyophilized serum in combating shock and in restoring the plasma proteins to their normal level promises to increase still further the already great demand for blood. In spite of the frequent use of whole blood and blood serum there have been surprisingly few studies on the rate of hemoglobin regeneration in the blood donors. Most of the recorded observations have been made on groups of professional donors who have given varying amounts of blood over a period of months or years, and the reports have been concerned with the hemoglobin and erythrocyte levels after multiple donations. Giffin and Haines¹ studied 84 donors, many of whom had given blood for 20 or more transfusions, and concluded that donations of 500 cc. of blood at intervals of four to five weeks are not harmful to male donors but that in female donors anemia often develops under similar conditions. Powell² studied 25 donors, 1 of whom had given blood for 63 transfusions, and found that anemia had developed in only 2 of the group. Jones, Widing and Nelson³ studied 50 donors who had given blood for a total of 175 transfusions and found that the blood hemoglobin level rapidly returned to normal. Certain donors exhibited such regenerative ability that the withdrawal of 1,200 to 2,000 cc. of blood within a period of one to twenty-three days was followed by a return of the hemoglobin level to normal within ten days. Martin and Myers⁴ found an average reduction of 310,000 in the erythrocyte count and a 5.2 per cent drop in the hemoglobin level following the removal of 500 cc. of blood. The minimum values were found six hours after the bleeding. No ill effects were noted in 10 donors who had given blood for a total of 52 transfusions, but Martin and Myers expressed the belief that blood should not be taken more frequently than every three

months. They too noted that hemoglobin regeneration is slower in female than in male donors. The same interval, three months, between blood donations was recommended by Brewer⁵ after observations on 1,076 donors, although he found that the hemoglobin had returned to its normal level at the end of two months in most donors. Cadham⁶ found that six months after the withdrawal of small amounts of blood for transfusions of convalescent serum there was no anemia and most of the subjects felt better than they had prior to the blood donations.

Less encouraging reports have been given by other investigators,⁷ who have found instances of persistent anemia after repeated donations of blood, and in some cases⁸ a reduction in the leukocyte count has been noted. A study of 101 Chinese donors⁹ revealed a reduction in the blood hemoglobin that paralleled the amount of blood withdrawn and the time that the subject had been serving as a blood donor. The anemia was of the microcytic type, and glossitis, achlorhydria and splenomegaly were occasionally encountered. The slower hemopoietic response in Chinese donors was attributed to the poor diet on which they subsisted, and it was found that they responded rapidly to the administration of an iron salt.

We have made observations on a total of 200 blood donors who have given blood for 636 transfusions at the University Hospitals. The list of donors was composed almost entirely of medical students, the resident staff and hospital employees, so that the subjects were predominantly young men who were available for follow-up study. A prerequisite to being placed on the list was the absence of organic disease detectable by physical examination, a negative Wassermann reaction and a blood hemoglobin level of 11.5 Gm. or more, except that in the early stages of the investigation a few donors with a lower hemoglobin reading were included. No blood was taken from a donor if a history of a recent infection or other illness was obtained.

An attempt was made to obtain the following data on each subject: the blood hemoglobin level immediately before the giving of blood, the level twenty-four hours after the donation and the level at weekly intervals thereafter until it had returned to the predonation value. In some instances the hemoglobin level prior to the donation was not determined; so the fall in the hemo-

From the Department of Internal Medicine, the State University of Iowa College of Medicine.

Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

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8. Brinck, J., and Oettinger, H.: Beobachtungen an Blutspendern, *Med. Klin.* **33**: 307, 1937.

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globin level and the recovery time could not be ascertained, although the rate of hemoglobin regeneration could still be determined. It was necessary to drop some subjects for various reasons before their recovery was complete, and whenever an infection of the upper respiratory tract or another illness that might influence

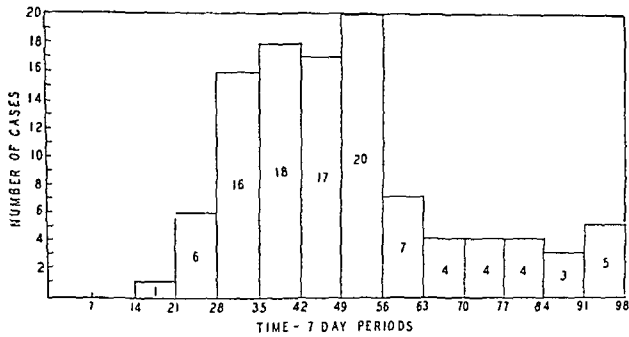


Chart 1—Recovery period by weeks

hemoglobin regeneration intervened the subject was immediately dropped from the study. Some subjects reported irregularly for hemoglobin determinations rather than at the specified weekly intervals. For these reasons complete data are not available for all the subjects who were under observation.

The data on hemoglobin regeneration were studied in three ways: 1. The length of time between the blood donation and the return of the blood hemoglobin to its original level, called the recovery period, was determined. 2. The weekly increase in hemoglobin over the amount at the first postdonation reading was ascertained, and from this the average gain per week was determined. 3. The daily increase in hemoglobin per hundred cubic centimeters of blood was ascertained, even though the donor was not followed until complete recovery.

Hemoglobin determinations were made almost entirely with the Newcomer hemoglobinometer, although a photoelectric photometer was used for a few of the more recent subjects. Both instruments were checked by the oxygen capacity method of Van Slyke. Hematocrit determinations were made in duplicate at the time of each hemoglobin determination.

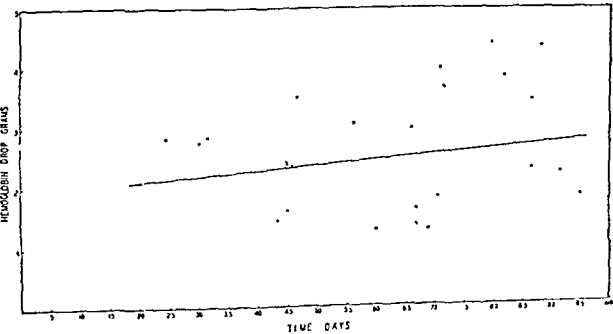


Chart 2.—Relationship between hemoglobin drop and recovery period

The blood for transfusion was drawn by members of the resident staff into 1,000 cc. graduated flasks in which had been placed a known amount of anticoagulant. The measurement of the amount of blood withdrawn was made from the graduations on the flask and was only grossly accurate. In a group of 155 donors the amount of blood withdrawn ranged from 475 to 600 cc., with an average of 555.7 cc.

In this group the levels of hemoglobin per hundred cubic centimeters of blood averaged 128 Gm., with a range of 15 to 10.5 Gm. With the withdrawal of 500 to 600 cc. of blood (the average was 555 cc.) there was a drop in the blood hemoglobin content which averaged 2.3 Gm. per hundred cubic centimeters, the greatest drop being 4.4 and the smallest 1.2 Gm. The 2.3 Gm. represents an average drop of 18 per cent, which is considerably greater than that reported by Martin and Myers.⁴

After the donors who were not followed until the hemoglobin level had returned to normal and those who did not have predonation hemoglobin readings done are excluded, there were 105 men whose recovery period was ascertained. The average time required for the blood hemoglobin to return to its original level was forty-nine and six-tenths days. There were wide variations among the individual recovery periods, the longest being ninety-eight days and the shortest eighteen. There were 29 donors whose hemoglobin had exceeded the original level by the time the first normal reading was obtained, so that the actual recovery period was slightly shorter than that recorded. The recovery period of nearly fifty days is considerably longer than that suggested by some of the previous reports. The number

Weeks	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	106	129	124	126	98	64	73	47	36	27	17	13	9	4
Hb gain	0.54	0.88	1.20	1.46	1.66	1.76	1.83	2.05	1.79	2.07	2.42	1.75	2.36	2.23

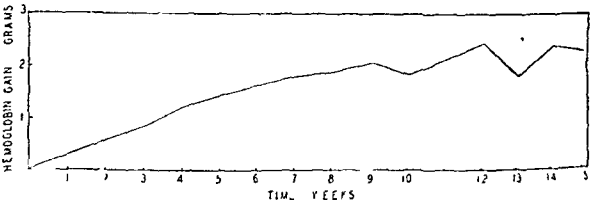


Chart 3—Hemoglobin increase by weeks

of donors whose hemoglobin level returned to normal during each seven day period is shown in chart 1. It will be noted that the hemoglobin of 1 donor returned to the original level during the third week, of 6 during the fourth week, of 16 during the fifth week and of 17 to 20 during each of the sixth, seventh and eighth weeks, so that the majority (74.2 per cent of the 105 subjects) had recovered at the end of this period. However, 25.8 per cent had not recovered at the end of eight weeks, whereas it is a common practice to have subsequent blood donations taken after an interval of only six to eight weeks.

From each of 30 donors 250 to 300 cc. of blood was withdrawn on each of two consecutive days, the second donation being taken twenty-four to thirty hours after the first and the reading to determine the fall in the blood hemoglobin being made twenty-four hours after the second donation. The average amount of blood withdrawn from these 30 subjects was 575 cc., and the average drop of the hemoglobin content was 2.2 Gm. The average recovery period for 26 donors, on whom the data was complete, was forty-five and four tenths days, with a range of twenty-seven to seventy-three days. This average is not significantly less than the average of forty-nine and six-tenths days for the entire group of men who gave the same amount of blood in a single donation.

It is well recognized that the rate of hemoglobin regeneration varies from one person to another; ^(a) it is

not surprising to find wide variations in the recovery periods. Because of the inaccuracies in measuring the amount of blood withdrawn for transfusion, an attempt was made to correlate the recovery period not with the amount of blood lost but rather with the fall in the blood hemoglobin level. No direct correlation could be made in individual cases, since, for example, the subject with the longest recovery period (ninety-eight days) had a drop in hemoglobin of 2.1 Gm., whereas the subject with the shortest recovery period (eighteen days) had a drop of 2.2 Gm. In general, however, the shortest recovery periods were those of the donors who showed the least drop in hemoglobin and the longest recovery periods those of the donors who showed the greatest fall in hemoglobin. For 23 donors whose recovery period was thirty-five days or less the average fall in hemoglobin was 2 Gm., while for 21 whose recovery period was sixty-three days or more the average fall was 2.7 Gm. From the foregoing statements it may be seen that the donors with a shorter

donors giving larger amounts of blood. The fall in the blood hemoglobin content in this group varied from 1.7 to 0.6 Gm., with an average of 1.2 Gm. Only 7 of these 11 donors were followed until complete recovery, and their recovery period varied from twelve to sixty-five days, with an average of thirty-three and three-

TABLE 1.—Recovery Periods After Each of Two Donations

Case	First Donation		Second Donation	
	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days
1.....	1.02	38	2.57	79
2.....	1.90	29	2.40	64
3.....	3.51	47	1.68	57
4.....	1.69	33	1.76	26
5.....	1.65	42	2.13	51
6.....	1.89	41	1.89	28
7.....	1.69	66	3.30	23

tenths days, which is significantly shorter than the average for the group who donated larger amounts of blood and showed a greater fall in hemoglobin.

The donors were predominantly men; so data were obtained on only 13 female donors. Their average drop in hemoglobin content was 2.2 Gm., and for the 5 who were followed to complete recovery the period ranged from thirty to seventy-three days, with an average of fifty-two and two-tenths days. This is but slightly greater than the average of forty-nine and six-tenths days for the entire group of 105 men whose recovery period was ascertained, but these data are not of great significance in view of the small number of cases. Of more significance is the average daily increase in hemoglobin for the 13 female subjects, 0.04 Gm. per hundred cubic centimeters, as compared with the 0.049 Gm. daily increase for the 155 men, suggesting that hemoglobin formation is slightly less rapid in women. Other investigators have reported that females are more prone to the development of anemia after repeated blood loss than are males and that they recover more slowly.

In order to determine the rate of hemoglobin regeneration in our donors—normal persons—we have grouped together all those who gave 500 to 600 cc. of blood. The recovery periods have been divided into weekly intervals, the gain in hemoglobin content over the content at the first postdonation reading has been recorded for each subject and the average gain for the entire group at the end of each week has been determined.

TABLE 2.—Recovery Periods After Each of Four Donations

Donor	First Donation		Second Donation		Third Donation		Fourth Donation	
	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days	Hemoglobin Drop, Gm.	Recovery, Days
1	1.76	57	1.69	..	2.07	47	2.11	38
2	1.89	41	1.89	28	2.19	86	2.34	..

Since observations were discontinued when the hemoglobin reached the original level and because some subjects dropped from observation, there is a gradual reduction in the number of donors for whom the averages were determined after the first five weeks. This gain in hemoglobin per week, together with the number of donors from whom the averages were derived and the curve of regeneration, is portrayed graphically in chart 3. It will be noted that there is an average increase of 0.54 Gm. during the first two weeks and a

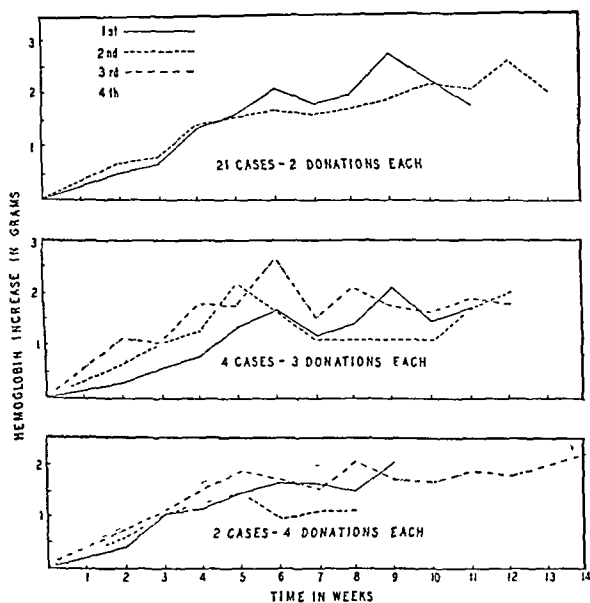


Chart 4.—Hemoglobin regeneration after repeated donations.

recovery period had the smaller reduction and those with a longer recovery period the greater reduction in hemoglobin. Sixteen subjects' blood hemoglobin content dropped 2.8 Gm. or more after the blood donation. The average drop for the 16 was 3.2 Gm. and the average recovery period sixty-one and two-tenths days. For 26 subjects whose drop was 1.9 Gm. or less the average drop was 1.6 Gm. and the average recovery period was forty-three and one-tenth days. It is evident from these data that the subjects with the greatest fall in the hemoglobin level had a longer average recovery period (sixty-one and two-tenths days) than did those with a smaller drop (forty-three and one-tenth days). In chart 2 the recovery period in days is plotted against the fall in hemoglobin, and it may be seen that in spite of individual variations in the rate of hemoglobin formation there is a linear relationship between the two and that the period necessary for recovery corresponds in general to the fall in hemoglobin.

From each of 11 donors only 300 cc. of blood was withdrawn, and they have not been included with the

subsequent gain of approximately 0.2 to 0.3 Gm. each week for the subsequent ten weeks. After the tenth week the curve is more irregular. Since the subjects followed for the longest time are those with the slowest hemoglobin regeneration and since those whose blood hemoglobin level had returned to normal were dropped from this study, the increase in hemoglobin in the later periods is less rapid.

The daily gain in hemoglobin per hundred cubic centimeters of blood was determined for each subject, and it was found that the average daily gain for the entire group of men was 0.049 Gm., with a standard deviation from the mean of ± 0.023 Gm. These data

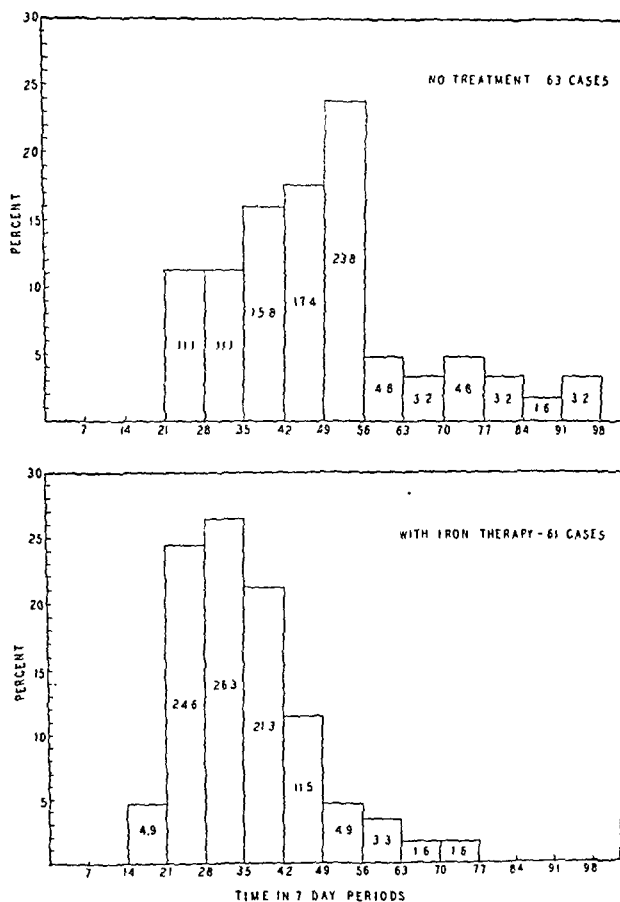


Chart 5.—Recovery period with and without iron therapy.

show the rate of hemoglobin regeneration in normal persons following the loss of a known amount of blood. No medication of any type was allowed.

In an attempt to ascertain whether or not the original blood hemoglobin level had any effect on the rapidity of regeneration the average daily increase was determined for donors whose hemoglobin level was 13.5 Gm. or more and for those whose level was 12.5 Gm. or less. For donors with the higher hemoglobin levels the average daily increase was 0.048 Gm., while it was 0.055 Gm. for those with the lower readings. It is apparent therefore that the initial hemoglobin level is not a significant factor in the rapidity of regeneration.

Twenty-one subjects were followed after a second blood donation. Their average hemoglobin drop after the first donation was 2.1 Gm., and their average recovery period was forty-three days. The average drop after the second donation was 2.3 Gm., and the average recovery period was fifty-two and one-half days.

This seems to indicate a lengthening of the recovery period, but in table 1, in which are given the individual records of the 7 subjects (of the 21) on whose recovery period after each donation the data were complete, it may be seen that for 4 donors (donors 1, 2, 3 and 5)

TABLE 3.—Recovery Period and Hemoglobin Gain After Two Donations, With and Without Iron Therapy

Donors	Iron Therapy, First Donation		No Treatment, Second Donation	
	Hemo-globin Drop, Gm.	Recovery, Days	Hemo-globin Drop, Gm.	Recovery, Days
15	2.17	39.1	2.62	52.6

it was longer and for 3 it was shorter after the second donation. For the 2 donors whose hemoglobin drop was almost identical after the two donations (donors 4 and 6) the recovery period was shorter after the second. Two donors gave 4 donations, and their recovery periods and the changes in their hemoglobin content are given in table 2. For donor 1 the recovery period was shorter after the third and fourth donations than after the first, and for donor 2 the period was shorter after the second but longer after the third donation. In chart 4 are plotted the hemoglobin gains per week in donors who gave more than 1 donation. In part 1 are the curves for the 21 donors after their first and second donations. In part 2 the average gain is shown for 4 subjects after each of 3 donations and in part 3 the average hemoglobin gain for 2 subjects after each of 4 donations. It is to be noted that there was no appreciable decrease in the rate of hemoglobin regeneration after 4 donations had been given. This is also evident from the average daily hemoglobin increase, which for 21 subjects after the first donation was 0.046 Gm., whereas after the second donation it was 0.048 Gm. The average daily hemoglobin increase for 4 subjects after their third donation was 0.051 Gm., and for 2 subjects after their fourth donation it was 0.06 Gm., so that in none of these subjects was the rate of regeneration slower after subsequent donations than after the first. All the subjects were followed until the original hemoglobin level was reached, and the next donation was given from one to seven days later. The interval between donations varied slightly, but subsequent donations followed soon after the subject's hemoglobin level had returned to normal.

TABLE 4.—Data on Female Donors

Donors	No Treatment, First Donation		Iron Therapy, Second Donation	
	Hemo-globin Drop, Gm.	Recovery, Days	Hemo-globin Drop, Gm.	Recovery, Days
6	2.08	52.4	2.49	43.6

EFFECT OF IRON THERAPY ON HEMOGLOBIN REGENERATION

Although the donors were receiving a normal diet and there was no evidence of or reason to suspect any degree of iron deficiency, we gave 1 Gm. (15 grains) of iron and ammonium citrates daily to certain subjects to study the effect on their hemoglobin regeneration. Eighty-nine donors gave one donation of blood

without medication during the recovery period and received iron and ammonium citrates after a second donation. The average daily hemoglobin gain for these 89 subjects after the first donation was 0.0518 Gm., and the average recovery period was forty-eight and two-tenths days for the 63 donors for whom it could be determined. After the second blood donation, with iron therapy, the average daily hemoglobin gain was 0.0772 Gm., an increase of 49 per cent over the gain in the first period. The average recovery period was only thirty-five and two-tenths days, a drop of thirteen days, or 26.9 per cent.

Of the 89 donors studied after each of 2 donations the recovery period of 63 was determined after the first donation and of 61 after the second. In chart 5 is presented the percentage of each group whose hemoglobin level returned to normal in each seven day period. The upper part shows the percentage of donors whose level returned to normal each week after the first donation, when no medication was administered, and the lower part shows the results in the period after the second donation, during which the subjects were receiving iron therapy. The upper part corresponds in general to the results shown in chart 1 for 105 subjects.

the period following the second donation, during which iron was administered. It will be noted that the hemoglobin increase was definitely more rapid when iron was given and that the hemoglobin had returned to its original level by the end of the eleventh week in all subjects.

These data have shown a definite increase in the rate of hemoglobin regeneration and a shortening of the recovery period during the administration of iron after a second blood donation. In a smaller group, of 15 subjects, iron was administered after the first blood donation and withheld after the second. In table 3 are shown the results for this group. After the first donation the average recovery period was thirty-nine and one-tenth days and the average daily hemoglobin gain was 0.0675 Gm. After the second donation, when no iron was administered, the average recovery period was definitely prolonged and averaged fifty-two and six-tenths days. Of greater significance is the daily hemoglobin gain of 0.0426 Gm., which is a decrease of 36.8 per cent from the previous rate of increase. It will be noted that, whereas the administration of iron after the second donation increased the rate of hemoglobin formation by 49 per cent, the withholding of iron

TABLE 5.—Data on Repeated Blood Donations

Donors	No Treatment First Donation			Continuous Iron Therapy														
	Hemo- globin Drop, Gm.	Recov- ery Period, Days	Daily Hemoglobin Gain, Gm.	Second Donation			Third Donation			Fourth Donation			Fifth Donation					
	Hemo- globin Drop, Gm.	Recov- ery Period, Days	Daily Hemoglobin Gain, Gm.	Hemo- globin Drop, Gm.	Recov- ery Period, Days	Daily Hemoglobin Gain, Gm.	Hemo- globin Drop, Gm.	Recov- ery Period, Days	Daily Hemoglobin Gain, Gm.	Hemo- globin Drop, Gm.	Recov- ery Period, Days	Daily Hemoglobin Gain, Gm.	Hemo- globin Drop, Gm.	Recov- ery Period, Days	Daily Hemoglobin Gain, Gm.			
155	2.32	49.6	0.0495															
83	2.36	48.2	0.0518	2.62	35.2	0.0772												
31	2.17	43.8	0.0545	2.43	34.3	0.0866	2.42	38.3	0.0687									
12	2.11	38.8	0.0551	2.45	28.4	0.1006	2.57	35.1	0.0720	2.44	48.9	0.0493						
11	2.17	39.6	0.0547	2.45	28.4	0.1010	2.58	35.1	0.0711	2.41	48.4	0.0489	2.67	45.3	0.0579			

None had a recovery period of less than twenty-one days, but 11.1 per cent recovered during each of the fourth and fifth weeks. During the next three weeks there was a gradual increase, with a peak of 23.8 per cent recovering during the eighth week. After this there was a sharp drop, so that from 1.6 per cent to 4.8 per cent of the donors recovered each week for the next six weeks. The results obtained after the second donation, during which period iron was administered, are in sharp contrast to those obtained after the first donation. In 4.9 per cent of the donors the hemoglobin level returned to normal during the third week, as compared to no returns to normal the third week in the previous group, and during each of the next three weeks 24.6, 26.3 and 21.3 per cent recovered. Of the donors not receiving iron the level in 78.2 per cent had returned to normal by the end of the eighth week, whereas of those receiving iron 77.1 per cent had recovered by the end of the sixth week and 93.5 per cent by the end of the eighth week. Chart 5 illustrates graphically the drastic reduction in the recovery period produced by iron therapy.

The effect of iron is further emphasized in chart 6, in which is plotted the average hemoglobin gain each week for the entire group of 89 subjects after each of the two blood donations. The lower, solid line shows the average weekly gain after the first donation, when no iron was administered. There was a steady increase during the first nine weeks and then a more irregular and a slower increase as fewer donors remained for study. The upper line shows the hemoglobin gain in

during the second postdonation period when it had been given during the first period lessened the rate of regeneration by 36.8 per cent.

The administration of iron also increased the rapidity with which the hematocrit reading returned to normal. In 108 subjects who received no iron the average time required for the hematocrit reading to return to its original level was twenty-nine and seven-tenths days, as compared with forty-nine and six-tenths

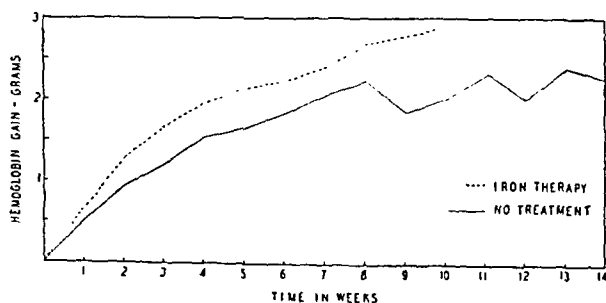


Chart 6.—Hemoglobin increase by weeks, with and without iron therapy.

days for the hemoglobin level. The recovery period ranged from nine to ninety-five days. With the administration of iron and ammonium citrates the average recovery period dropped to twenty-two and two-tenths days, individual periods ranging from eight to forty-nine days, which is a decrease of 25.2 per cent. The effect of iron on the hematocrit reading was less noticeable than the effect on hemoglobin regeneration but definitely hastened its return to normal

Six female donors were observed during iron therapy after a second blood donation, and the data on them are given in table 4. After the first blood donation, without therapy, the recovery period was fifty-two and four-tenths days and the daily hemoglobin gain was 0.0427 Gm. After the second donation, with iron therapy, the recovery period was forty-three and six-tenths days and the daily hemoglobin gain was 0.0629 Gm., an increase of 47 per cent over the gain in the first period.

The data so far presented have been concerned with only 2 blood donations and with the giving of iron during the second period. The iron therapy has uniformly increased the rate of hemoglobin formation. Some of the subjects have been studied through a series of blood donations during which they have received iron therapy continuously. Subsequent donations were given within a few days after the hemoglobin had returned to its original level. In table 5 are the data on these donors, all of whom were men who gave from 500 to 600 cc. of blood each time. The drop in hemoglobin, the recovery period in days and the daily hemoglobin increase are given for each group of subjects for each blood donation. The results following the first two donations have been discussed. It will be noted that after the third blood donation the recovery period was shorter and the hemoglobin regeneration more rapid than they had been after the first donation but that recovery was less rapid than after the second donation. After the fourth donation the rate of regeneration was still slower and was no more rapid than it had been during the first recovery period, in which iron therapy had not been given. In the 11 subjects followed through the fifth donation there was a slight gain in rate over that in the fourth period, but the rate was approximately that of the first period. From these data it is evident that the administration of iron had progressively less effect on hemoglobin regeneration but that the rate of regeneration did not drop below that which was noted after the first donation even though 5 donations were made in rather rapid succession.

SUMMARY

These data have been presented to show the drop in hemoglobin that occurs in healthy blood donors after the withdrawal of blood for transfusion and the time required for these persons to regain their normal hemoglobin level. In the event that it becomes necessary to set up transfusion services on a large scale such detailed information may be of value in the selection of donors and in determining the frequency with which they should be used, as well as in presenting accurate data to prospective donors as to the time which must elapse before their blood returns to normal. The average drop in hemoglobin, of 2.3 Gm., after a donation of 555 cc. of blood is not sufficient to be of danger or to produce more than transient symptoms. Although wide variations in the recovery period were noted among individual donors, there was a definite correlation between the drop in hemoglobin and the length of the recovery period in days. It was found that the average man regained the lost hemoglobin within fifty days without any form of therapy. With the donation of a smaller amount of blood and a consequent smaller drop in hemoglobin the recovery period was shorter. Persons with a higher initial hemoglobin reading did not regenerate hemoglobin more rapidly than those with a lower, but still normal, hemoglobin value. We

could detect no means by which the rapidity of hemoglobin regeneration in any one person could be predicted beforehand.

Subsequent blood donations may be given with safety as soon as the hemoglobin has returned to its original level, regardless of the elapsed time. In the majority of donors an interval of two months will suffice for hemoglobin regeneration, but 25.8 per cent in our series required a longer period. For this reason it is not advisable to establish a routine interval of two months between donations unless the donor's fitness to give blood is established by hemoglobin determinations. We did not feel that the regeneration of hemoglobin became slower after multiple donations than it had been after the first.

The response of the normal hemopoietic system to the loss of a known amount of blood is of interest. With the resultant mild anemia an average of 0.04 Gm. of hemoglobin per hundred cubic centimeters of blood was produced each day until the deficit was replaced. This was accomplished without medication but with a normal dietary intake of iron.

The administration of small amounts of iron to the blood donors had a surprising effect on hemoglobin regeneration. The rate of regeneration was increased nearly 50 per cent by the use of iron and there was a drastic shortening of the recovery period, so that subsequent blood donations were possible after a much shorter interval. With this medication the blood hemoglobin content in 93.5 per cent of the subjects had returned to normal by the end of eight weeks. The group of donors to whom iron was administered after the first donation but withheld after the second showed a slower hemoglobin regeneration during the second postdonation period. This shows that the increased rate of hemoglobin regeneration after the first donation was due to the effect of the medication itself rather than to a stimulation of the bone marrow from the blood loss. The effect of iron was transient, the donor being benefited only one or two recovery periods, so that continued administration of iron did not maintain the rate of hemoglobin regeneration above the original rate. There was no evidence of exhaustion of the bone marrow while the subjects were under observation, since the rate of hemoglobin regeneration after the fifth donation was approximately the same as that after the first.

The rate of hemoglobin regeneration was slightly less rapid in women than in men, and the time necessary for recovery was somewhat longer. The administration of iron during one recovery period increased the rate of hemoglobin regeneration 47 per cent. Because of the slower regenerative power of their blood female donors should be allowed longer intervals between blood donations.

CONCLUSIONS

The average drop in blood hemoglobin after the removal of 555 cc. of blood was 2.3 Gm.

The average time required to replace this amount of hemoglobin was forty-nine and six-tenths days.

The longer recovery periods were associated with a greater drop in hemoglobin and could not be correlated with the initial blood hemoglobin values. With a smaller donation and a smaller drop in the blood hemoglobin the recovery period was shorter.

Hemoglobin was regenerated in men at the rate of 0.049 Gm. per hundred cubic centimeters of blood per day under these conditions, and in women the increase was 0.040 Gm. per day.

Subsequent donations may be given with safety as soon as the blood hemoglobin has returned to its original level. An interval of three months should be allowed between blood donations if the hemoglobin of the donor is not determined regularly. The rate of hemoglobin regeneration after subsequent blood donations did not seem to be slower than after the first donation.

The administration of 1 Gm. of iron and ammonium citrates per day increased the daily hemoglobin regeneration by 49 per cent and shortened the recovery period from forty-nine and six-tenths to thirty-five and two-tenths days during the first period of its administration. It had progressively less effect after subsequent blood donations.

BLOOD PLASMA

ITS PLACE IN THE PRACTICE OF MEDICINE,
WITH SPECIAL CONSIDERATION TO THE
PROBLEMS OF PRESERVATION

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In previous papers we have discussed the technical details of various methods of preservation applicable to human blood plasma and pointed out certain limitations of each method.¹ In this paper we will discuss the effect that the various methods of preservation have on the quality and therapeutic value of plasma. Brief mention will also be made of the dosage in some of the more common conditions.

The following three premises seem generally acceptable: (1) blood plasma is used with satisfactory results in a large number of clinical conditions; (2) the effect of plasma depends on the action of certain elements contained therein; (3) these elements are variously affected by the manner of preservation of the plasma, as will be shown in this presentation. Acceptance of these three premises justifies the conclusion that any method of preservation applied to human plasma will profoundly influence its therapeutic value, and for this reason it is essential for the clinician to have a clear understanding of the changes caused by certain methods of preservation.

EFFECT OF PRESERVATION ON THE SAFETY OF PLASMA

In considering the value of any therapeutic agent, first consideration must be given to the possibility of harmful effects on the patient. Pooled or diluted human plasma separated with ordinary aseptic precautions from citrated blood immediately after collection and administered at once to the patient has proved free of reactions save for mild urticarial manifestations. This strictly fresh plasma is an ideal blood substitute, but its routine use is not practicable. To serve all its purposes blood plasma must be available in a form not requiring time-consuming preparation before administration.

In the development of methods of the preservation of plasma it must be remembered that the safety of the material may be affected by (1) the comparative ease of bacterial contamination and (2) the tendency of certain unstable proteins to form particles. Bacterial contamination has been responsible for most of the febrile reactions which have been reported² following the administration of plasma. Recently the report of a sudden death during the intravenous administration of unfiltered plasma³ has emphasized the absolute necessity of strict care in the prevention of flocculation or filtration to remove flocculi already formed. Microscopic examination of sections of lung tissue showed numerous small branches of the pulmonary artery blocked by emboli of fibrin-like material.

Both bacterial contamination and flocculation may be effectively prevented by rapid separation of plasma from freshly collected blood, followed by prompt fixation of plasma by freezing. Plasma may then be stored in the frozen state or, if it is considered desirable, dried from the frozen state.

Proper restoration of frozen or dried plasma results in a liquid free from flocculi. It must be noted, however, that while plasma properly restored from the frozen state is practically indistinguishable from the original material, plasma restored from the dried state is turbid. This turbidity, however, does not apparently cause any untoward effects.

Complete details of a method of preparation of plasma and of preservation by freezing or drying may be found elsewhere.⁴

To complete the measures to be taken to insure a safe material, provision must be made to reduce an occasionally high isoagglutinin content by pooling from eight to twelve lots of plasma.

EFFECT OF PRESERVATION ON CERTAIN SPECIFIC ELEMENTS OF PLASMA

We will now compare various methods of preservation in general use, with special reference to the efficiency of each method in maintaining the original content of the various elements of plasma.

In the table are listed the clinical conditions in which plasma is most widely used, grouped according to the plasma fraction on which most of the therapeutic effect is based.

In general, the response to plasma transfusion is dependent on (1) the total protein content, (2) the specific and nonspecific antibodies and (3) the anti-hemorrhagic properties due in part to prothrombin. The practical application of this grouping to clinical cases demonstrates much overlapping, as most patients will benefit from more than one of the fractions mentioned, although in varying degrees. For this reason preserved plasma should be as nearly like the fresh material as possible.

2. Strumia, M. M., and McGraw, J. J.: The Development of Plasma Preparations for Transfusions, read before the American College of Physicians, Boston, April 24, 1941. Reports of British Workers contained in Bulletin on Shock, National Research Council.

3. Mayner, Frank: Death from Transfusion of Plasma, J. A. M. A. **116**: 2015 (May 3) 1941.

4. Strumia, M. M.; McGraw, J. J., and Reichel, John: The Preparation and Preservation of Human Plasma: I. Collection of Blood and Separation of Plasma, Am. J. Clin. Path. **11**: 175 (March) 1941; II. Drawing Off, Pooling and Distribution of Plasma, *ibid.* **11**: 288 (April) 1941; III. Freezing of Plasma and Preservation in the Frozen State, *ibid.* **11**: 388 (May) 1941. IV. Drying of Plasma from the Frozen State by Low Temperature Condensation, in Vacuo, *ibid.* **11**: 480 (June) 1941.

From the Laboratory of Clinical Pathology, Bryn Mawr Hospital. Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

This work was aided by a research fund created by Mrs. John S. Sharpe, Mrs. Edward Law, the Social Service Department, the Women's Board of the Bryn Mawr Hospital, and the National Research Council.

1. Strumia, M. M., and McGraw, J. J.: Frozen and Dried Plasma for Civil and Military Use, to be published. Strumia, McGraw and Reichel.*

USE OF PLASMA FOR TOTAL PROTEIN CONTENT

The large group of conditions (including shock and various forms of hypoproteinemia) which are benefited mainly by the total protein content of plasma are adequately treated by plasma preserved in any form provided it is pyrogen free and contains no flocculi. The

amount of protein lost by flocculation occurring in liquid plasma preserved at 4 C. is practically negligible. Flocculation is almost completely eliminated by preservation of plasma at room temperature (about 25 C.). Although desiccation of plasma apparently alters the albumin-globulin ratio as determined by the usual laboratory methods, no indication of alteration of the proteins is found in the cataphoretic pattern obtained by the Tiselius apparatus.⁵ Plasma that has been properly preserved in the frozen state and rapidly thawed⁶ appears almost identical to fresh plasma. This means of preservation is the only one to maintain maxi-

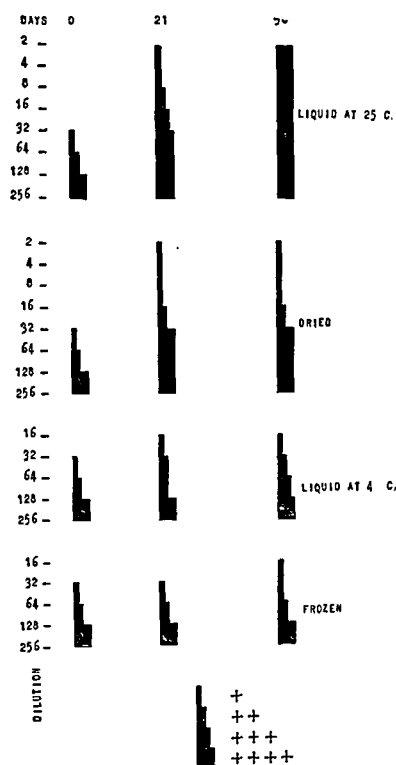


Chart 1.—Effect of various methods of preservation of plasma on complement titer. The amount of complement is inversely proportional to the thickness of the lines of the graph, thus:

No line 0 100% complement
Widest line + + + + no complement

mal content of all the specific elements. This is important in the treatment of many diseases requiring complement and prothrombin in addition to the total protein content, such as for example a patient suffering from shock with wounds likely to become infected, or a patient with hypoproteinemia and hypoprothrombinemia resulting from such conditions as liver disease, colitis and intestinal obstruction.

When hypoproteinemia is the indication for the use of plasma transfusion, the quantity to be administered is a major factor that will be considered later.

SPECIFIC AND NONSPECIFIC ANTIBODIES

Whereas the specific antibodies are relatively stable,⁷ the content of complement is considerably influenced by the means of preservation. Chart 1 shows the effect of the method of preservation on the complement content, as determined by amboceptor-hemolysin titration. The preservation of complement is optimal when the plasma is maintained in the frozen state, very satisfactory for almost two months when it is maintained at 4 C., fair when preserved by drying and poor at room temperature (about 25 C.). It must be mentioned that when serum

is dried in small quantities, in the order of 1 to 10 cc., preservation of complement is very good. Thus guinea pig serum for the complement fixation test is adequately preserved by drying in small quantities without previous addition of preservative. Results expressed in chart 1 are based on titration of plasma prepared by a standard technic described elsewhere,⁴ in which the citrated plasma is dried in lots of approximately 300 cc. containing from 17.5 to 18 Gm. of plasma protein in a 400 cc. bottle. It is possible but less practicable to dry this quantity of plasma in such a manner as to maintain a higher content of complement. In all the dried plasma mentioned in this article the residual moisture was less than 1 per cent. It must be mentioned also that all the plasma used in this investigation contained merthiolate in the proportion of 1:10,000. The effect of this preservative on the survival of the various elements of plasma is being investigated.

ANTHEMORRHAGIC PROPERTIES

In this review we will limit our observations mainly to the antihemorrhagic properties due to the prothrombin content. The loss of prothrombin in citrated blood kept at 4 C. has been reported repeatedly.⁸ As will be seen in chart 2, the preservation of prothrombin in liquid plasma at 4 C. is better than that reported for whole blood. The optimal method for preservation of prothrombin is again maintenance in the frozen state. Plasma dried from the frozen state and restored with sterile pyrogen-free distilled water or plasma stored at room temperature (about 25 C.) for even short periods shows almost complete loss of prothrombin. It has been suggested⁹ that prothrombin may be lost in the process of drying owing to the removal of carbon dioxide with resultant increased alkalinity.

DOSAGE OF PLASMA

It may be stated that the amount of plasma usually administered is smaller than the quantity necessary for best results. In referring to the dosage of plasma, it is far better to speak of the grams of protein contained in each dose rather than the total amount of fluid employed. This is desirable because of the wide varia-

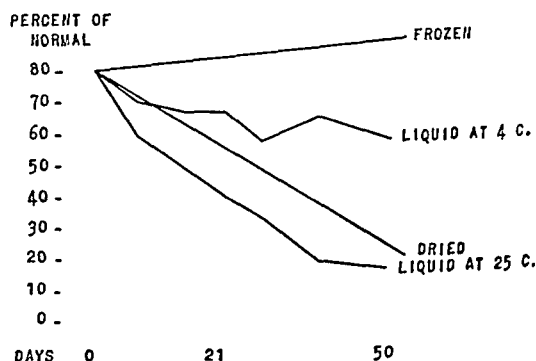


Chart 2.—Effect of various methods of preservation of plasma on prothrombin content.

tions in the amount of sodium citrate and other solutions added to the whole blood at the time of collection, with resultant variations in the dilution of the plasma. If the protein content should be accepted as the standard

5. Scudder, John: Studies in Blood Preservation: The Stability of Plasma Proteins. *Ann. Surg.* **112**:502 (Oct.) 1940.

6. Strumia, McGraw and Reichel: III. Freezing of Plasma and Preservation in the Frozen State.

7. Strumia, M. M.; Wagner, J. A., and Monaghan, J. F.: The Intravenous Use of Serum and Plasma, Fresh and Preserved. *Ann Surg.* **111**: 623 (April) 1940.

8. Rhoads, J. E., and Panzer, L. M.: The Prothrombin Time of "Bank Blood." *J. A. M. A.* **112**:309 (Jan. 28) 1939. Lord, J. W., and Pastore, J. B.: Plasma Prothrombin Content of Bank Blood. *ibid.* **112**: 2231 (Dec. 10) 1939.

9. Florsdorf, E. W., and Mudd, Stuart: The Procedure and Apparatus for Preservation in the Lyophilic Form of Serum and Other Biological Substances. *J. Immunol.* **29**:389 (Nov.) 1937.

of dosage, it would allow for better understanding and comparison of reports from various groups of workers; it would render unnecessary a statement of the amount of diluting solution employed, and finally it would permit the clinician to know exactly what to expect out of any given plasma preparation.

In cases of shock with or without hemorrhage the usual initial dose of plasma is 35 to 36 Gm. of plasma proteins, corresponding to 500 cc. of undiluted plasma. Additional doses may be required up to two or three times this quantity. The dose for any patient is, of course, the amount needed to raise and maintain an adequate volume of circulating blood as evidenced by satisfactory pulse, blood pressure and blood concentration readings.

Burns require large amounts of plasma protein, depending on their extent. The immediate indication

Clinical Indications for Plasma Therapy and Elements of Plasma Most Needed

Clinical Indications for Plasma Therapy	Elements of Plasma Most Needed
Shock (with or without hemorrhage)	Total Protein Content
Burns . . .	
Hypoproteinemias . . .	
Cerebral edema (concentrated plasma preferred).	
Hemorrhagic diseases (especially hypoprothrombinemia and hemophilia)	Prothrombin and other undetermined element or elements
Infections (including prevention of childhood exanthematic diseases)	Specific and nonspecific antibodies (complement)

for plasma in burns is usually that of shock, with correspondingly similar criteria for dosage. However, in extensive burns the prolonged and severe loss of plasma proteins and the resulting severe hypoproteinemia necessitate frequently repeated plasma transfusions. The hypoproteinemia is often particularly severe beginning from the third day. Plasma with a full content of complement would seem preferable in such cases in view of the frequency of infection of the denuded areas. The dosage of plasma in burns, beyond the original shock period, is best determined by the plasma protein content of the circulating blood, by the urinary output and by the occurrence of edema. A patient with severe burns extending over approximately two thirds of the body surface required approximately 700 Gm. of plasma protein (or 10 liters of plasma), the equivalent of forty lots of blood of about 500 cc. each. The patient made a good recovery.

The more chronic severe forms of hypoproteinemia may require relatively enormous amounts of plasma proteins to effect any significant change in the amount of circulating protein, although clinical results are often evident after much smaller doses. The lag in the rise of the patient's plasma protein is likely due to the tissue hypoproteinemia. The commonest forms of chronic hypoproteinemias are due to (1) excessive losses, as in nephrotic states; (2) diminished absorption, as in starvation and many gastrointestinal diseases; (3) faulty liver function, as in cirrhosis, and (4) a combination of any of these causes.

Thus a patient suffering from subacute hepatitis required 518 Gm. of plasma proteins, or 7,500 cc. of undiluted plasma, to tide him over a period of nineteen days including an extensive operation to relieve an obstruction at the ampulla.

A patient suffering from nephrotic hypoproteinemia in the course of a chronic nephritis required 710 Gm.

of plasma proteins, or 10,000 cc. of undiluted plasma, in a period of twelve days. The results were satisfactory.

The dosage of plasma, when it is used for its content of specific and nonspecific antibodies, is a matter based mostly on clinical appraisal, and consequently the proper amount to be used is difficult to estimate accurately. In prolonged severe infections the role of plasma in correcting hypoproteinemia must be considered in addition to any effect of specific and nonspecific antibodies.

For prophylaxis or modification of many infectious diseases, especially measles and scarlet fever, the use of pooled adult plasma has given gratifying results. The average dose varies from 0.7 to 3.5 Gm. of plasma proteins, or from 10 to 50 cc. of undiluted plasma.

Hypoprothrombinemia is usually corrected well beyond the danger limit by the transfusion of 35 Gm. of protein (500 cc. of undiluted plasma). For routine use in difficult deliveries we keep on hand bottles of 12 to 15 cc. of undiluted frozen plasma, containing 0.85 to 1 Gm. of plasma proteins made from a pool of several fresh bleedings. This allows an easy means of raising the prothrombin level of the newborn in the shortest possible time.

SUMMARY AND CONCLUSIONS

1. Regardless of the means of preservation employed, plasma must be safe from the standpoint of (a) bacterial contamination, (b) presence of flocculent protein precipitates and (c) unusually high isoagglutinin titer.

2. The manner of preservation greatly influences the survival of various specific elements of plasma. To summarize: (a) Preservation of plasma in the liquid state at room temperature (approximately 25 C.) causes very little flocculation but rapid loss of prothrombin and complement. It should be filtered before use, and the danger of rapid growth of a chance contamination must also be kept in mind. The value of such material is limited almost entirely to the total protein content. (b) Preservation of plasma in the liquid form at 4 C. maintains a fair quantity of prothrombin and complement, for a period of approximately fifty days, but causes maximal flocculation within a few hours. Filtration is essential and the danger of bacterial growth from a chance contamination is not eliminated. (c) Preservation of plasma in the dried state effectively prevents bacterial growth and flocculation, but the regenerated material has lost almost all the prothrombin and a portion of the complement when drying involves quantities of 250 and 300 cc. It need not be filtered and permits concentration if desired, but it is of little value for hypoprothrombinemia. (d) Preservation in the frozen state prevents bacterial growth and flocculation and at the same time insures almost complete preservation of all specific elements, including prothrombin and complement. After proper thawing it need not be filtered, and the therapeutic value is practically equal to that of freshly prepared plasma. Thawing must be rapid in the water bath at 37 C., and thereafter, until administered, the liquid plasma must be kept at room temperature.

3. The loss of essential elements occurring with preservation of plasma in the liquid state or in the dried form obviously limits the therapeutic application of plasma thus preserved. Plasma maintained in the frozen state and properly thawed is almost identical to the original material.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. FOWLER AND BARER AND
DRs. STRUMIA AND MCGRAW

DR. CHARLES A. DOAN, Columbus, Ohio: I have been interested in this problem of the reaction of the donor to the giving of blood for either plasma or whole blood transfusion purposes. It is important to recognize both psychic and physical factors which influence the immediate reaction in the individual donor. The amount of blood which may be removed without signs or symptoms of shock varies widely from donor to donor, and in the same donor at different times. Dehydration, extreme physical fatigue and mild upper respiratory infections definitely condition the donor's immediate response. In the normal, healthy, rested adult Dr. Moore and I have shown by blood volume studies immediately before and after donations an astonishingly prompt and rapid plasma replacement from the tissues with restoration of the original total blood volume within a few minutes or at most a few hours. Conversely, the average recipient shows an equally prompt displacement of plasma, commensurate with the new increment of cells received by blood transfusion, confirming the tendency to relative stability of total blood volume in each individual through the compensatory interchange of intravascular and extravascular body fluids. When these donors are studied in terms of the formed elements of the blood, as reported by Drs. Fowler and Barer, a much more variable recovery period is observed. Incidentally, one must not forget to discount technical and vasomotor factors in the interpretation of any single blood estimation. Drs. Fowler and Barer cite one donor who did not show complete cellular and hemoglobin reequilibration for ninety-eight days, as contrasted with only eighteen days required by another. There may be a critical level of iron reserves in the tissues of the body, which does not become evident until some such extra demand is made. Dr. Moore and I have shown that if the plasma iron is low, as for example in a mild hypochromic microcytic anemia, there will be very slow regeneration of hemoglobin following blood loss because of the lack of available iron reserves for the regenerative synthesis of hemoglobin. It is this same principle, which we apply in the treatment of polycythemia vera, when, after repeated venesection, erythropoiesis may be observed to have diminished appreciably coincident with the development of a low plasma iron and hypochromic microcytic red cells. Of course that is just what must be avoided in persons who generously donate blood for transfusion. Drs. Fowler and Barer have clearly demonstrated that iron, supplemental to the ordinary diet, will facilitate hemoglobin regeneration in the average healthy donor. If this is true for the male, it is doubly true for the mature menstruating female in my experience. The giving of iron routinely as a postdonation procedure would therefore seem to me to be desirable in most men and essential in all women donors.

DR. PAUL I. HOXWORTH, Cincinnati: The most important contribution Drs. Strumia and McGraw have made is their report of results as to the prothrombin content of dried plasma, as opposed to frozen plasma. I have one question: Since the results in determination of prothrombin content are so variable when one uses different methods, might it not be possible in the future that they may alter their conclusion as to the prothrombin content of dried plasma or change some step in the process which will preserve prothrombin better? As a result of the careful study of the effects of the various technics and methods for the proper preservation of plasma by Drs. Strumia and McGraw and a number of other workers, there is no doubt that a valuable and safe blood substitute is being developed. A subject of equal importance is the making of this product available in the hospital of average size which holds no research subsidy. This institution is faced with the problem of supplying plasma by one of three methods: (1) by producing its own, (2) by purchase from a commercial house, (3) by participation in a plasma center supported by a group of hospitals. The first method, that of producing its own, presents the obstacle of cost. The expense of suitable personnel, equipment and adequate control of technics required to observe the best known standards of safety, which have been defined by Dr. Strumia and other workers, and of the collection, pooling, redistribution, processing

and preservation is certainly great. The second method, that of purchase from the commercial house, is even more prohibitive to the average patient, when amounts indicated in various clinical conditions often reach from 1,000 to 2,000 cc. or even more per patient. Not many physicians have patients who can afford from \$200 to \$400 or more for parenteral proteins. The third method, that of establishing a plasma center through the cooperative effort of a group of hospitals, offers much promise. Duplication of costs of equipment, personnel and operation is avoided. The ultimate expense of the product is reduced when friends and relatives of patients may serve as free blood donors. In addition, the medical direction of an organization of this kind can be readily secured on a volunteer basis among physicians who are interested both in having the advantages of a plasma center for their community and in contributing to improved knowledge concerning the entire subject. The university and general hospitals should lead the way in the development of such plasma centers.

DR. WILLIS M. FOWLER, Iowa City: With regard to the question which Dr. Doan raised as to the menstrual blood loss in female donors, we did not take that into consideration; but previous work has shown the average blood loss during the menstrual period to be about 50 cc. That will undoubtedly affect the recovery period to some extent and may account for the difference in the rate of recovery in the male and in the female. With regard to his second question as to varying dosages of iron, I do not feel that a larger dose of iron and ammonium citrate would cause a more rapid regeneration of hemoglobin under these circumstances than did the dose which we used. I believe that ferrous sulfate in a smaller dose would have the same effect as the iron and ammonium citrate. I feel that iron is not acting merely as a form of replacement therapy in these cases but that there is at least some degree of stimulating effect from the administration of the iron. We have given these blood donors iron after the first donation and then withheld it after a second and a third donation and then given it again after subsequent blood donations. The response to a second administration of iron is never quite as great as that obtained the first time it is given.

DR. MAX M. STRUMIA, Bryn Mawr, Pa.: I endorse Dr. Hoxworth's comments on the plasma center. It is only by the establishment of community collecting and distributing centers that an adequate supply of plasma will be made available not only for civil use but for use in emergencies, both local and general. We are trying to establish such a center, and many others are being established throughout the country. Concerning the question of prothrombin determination and prothrombin preservation in the dried state, I would say it is most essential, in order to obtain reliable data on the prothrombin time, that a technic be strictly standardized. We have used throughout our work a modification of the Quick method. The modification is especially directed to maintaining a set of rigidly enforced standards for both the prothrombin and the thromboplastic suspension. We have found that the best and by far the cheapest way to maintain both prothrombin standards and the thromboplastic suspension at a perfectly even keel is to keep both of these materials in the frozen state in any ordinary freezing cabinet. Thus for periods anywhere from fifteen days to four weeks and more, under certain conditions, one can be assured of having a perfectly unchanged prothrombin standard, as well as a perfectly unchanged thromboplastic solution, so that when one is doing serial determinations one is always using exactly the same unit to measure the thrombin time. Concerning the question Is there anything that may lead us to hope that in the future better preservation of prothrombin will be secured in plasma preserved in the dry state? We have about half completed studies that make us feel that a solution of the other problem is at hand. The loss of prothrombin in the dried plasma is quite likely connected with the greatly increased alkalinity of dried plasma. This increased alkalinity is due to two factors: first, the addition of sodium citrate to prevent coagulation; second, and perhaps a more important factor, the loss of serums during the drying period owing to the fact that we work under a high vacuum. If we regenerate plasma, as it is usually done, with plain, ordinary, sterile distilled water, the pH of the resulting solution is somewhere around 7.8 to 8.1.

If we buffer our sodium citrate, or if we regenerate our plasma in sterile water which has been saturated with carbon dioxide, we may obtain a remarkable preservation of prothrombin. When one regenerates plasma dried from the frozen state with distilled water which has been saturated with carbon dioxide one obtains a preservation in the neighborhood of 55 per cent. We are still below the optimal obtained by preservation in the frozen state, but since dried plasma has advantages under definite conditions we are hoping to be able to offer a solution of this problem by either one of these two methods mentioned.

CHRONIC ULCERATIVE COLITIS

A CLINICAL SUMMARY OF THE MANAGEMENT IN NINE HUNDRED AND TWELVE CASES

M. H. STREICHER, M.D.
CHICAGO

As in all scientific pursuits, in clinical medicine one invariably becomes tenaciously attached to the study of some entity yet unconquered. After many years physicians are still searching for a specific treatment for one of the most dreadful diseases in the abdomen, chronic ulcerative colitis. In this writing an attempt is made to outline and correlate the experiences I have had with 912 cases.

The essential diagnostic features that may influence the decision as to the type of management to institute are (1) the clinical history, (2) the pathologic conditions seen on proctoscopy and (3) the roentgenologic description of the extent of the disease and the degree of anatomic changes produced (table 1).

The important details related in any clinical history of an abdominal ailment have been well written up many times and need not be repeated.¹ Expert understanding and evaluation of the extent of the lesion of the mucosa of the colon is the most essential single factor in the determination of the type of management to pursue and of the prognosis. For instance, it is important to understand that a narrow lumen observed proctoscopically may mean severely edematous mucosa and not necessarily an absolutely irreparable anatomic constriction due to fibrosis. The treatment will of necessity be vitally different.

The fact that little new has been added to the establishment of specific therapy of chronic ulcerative colitis makes detailed discussions on the subject repetitious. There is, however, knowledge derived in recording large experiences grouped and summarized. The management in general resolves itself into a clearcut differentiation between acutely ill patients needing hospital care and chronically ill patients requiring occasional ambulatory treatment. For the acutely ill patient the main line of attack is chiefly supportive. It is essential to maintain good nutrition, to bolster the blood level by transfusions and to support the defensive mechanism by the administration of a high caloric and high vitamin diet.² All this must be done quickly to prevent a severe loss of body fluids, to stem a progressive decline in blood proteins and to combat severe toxemia.

The chronically ill patient is concerned mainly with maintaining well-being and avoiding recurrences. He

is resigned to the fact that he must learn to live with the disease and therefore wishes to be armed so that a useful life may be followed. An ambulatory patient must be on guard against sudden seasonal changes and against radical changes in the diet and must have sufficient rest. Nutrition must be maintained and foci of infection systematically attended to. In table 2 an outline of the management is given.

The introduction of therapy with sulfanilamide and its derivatives was received with relief, but, while almost miraculous results have been recorded in some isolated instances, use of these drugs in the treatment of chronic ulcerative colitis is hazardous.

Their specificity of action on infections due to *Streptococcus hemolyticus* has been established, but, while a small percentage of patients with chronic ulcerative colitis do harbor this streptococcus, the predominant bacterium present in the stool and obtained on culture is *Streptococcus viridans*. Any beneficial results obtained with any of these compounds in the treatment of chronic ulcerative colitis must therefore be considered incidental or secondary, due to an indirect action of the drug.

TABLE 1.—Essential Diagnostic Features

1. Clinical history
2. Proctoscopic data
 - A. Pathologic changes in colon
 - A. Inflammation and edema
 - B. Abscess formation (millary)
 - C. Diffuse granular mucosa
 - D. Fibrous constriction of lumen
3. Roentgen data (barium sulfate enema)
 - A. Constriction of lumen of colon, longitudinal and transverse
 - B. Absence of haustra

TABLE 2.—Management

1. Acute stage (hospital care)
 - A. Bed rest
 - B. Blood transfusions (250 to 500 cc.)
 - C. Diet (basal plus high vitamin content including vitamin K)
 - D. Powdered opium, dilute hydrochloric acid, liver extract
 - E. Sitz bath, an oxycholesterol-petrolatum ointment, phenobarbital at bedtime
2. Chronic stage (patient ambulatory)
 - A. Diet high in vitamins
 - B. Powdered opium, dilute hydrochloric acid, liver extract, phenobarbital at bedtime, ferrous sulfate
 - C. Sulfanilamide derivatives
 - D. Vaccine (polyvalent)
 - E. Removal of foci of infection

My experiences concern the use and evaluation of sulfanilamide and two of its derivatives (table 3).

The results with sulfanilamide proved disappointing. The drug was given to 12 acutely ill patients and 5 chronically ill ones. All the acutely ill patients became considerably upset; vomiting ensued, diarrhea became exaggerated, blood appeared in the stool in larger amounts than usual and cramping in the abdomen became severe. Two ambulatory patients improved temporarily but with prolonged administration of the drug became very ill. At present I am dubious about employing sulfanilamide again in the treatment of chronic ulcerative colitis.

Azosulfamide merits a more favorable position. It is less toxic, it is tolerated better and it has the added advantage that, if desired, it may be administered parenterally during periods of suspension of oral administration. Azosulfamide was used in 18 cases of acute involvement with *Str. viridans* predominating and in 4 cases in which *Str. hemolyticus* also appeared in the

From the Research and Educational Hospital and Grant Hospital.
Read before the Section on Gastro-Enterology and Proctology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Soper, H. W.: Chronic Ulcerative Colitis, *Ann. Int. Med.* 1: 313-350 (Nov.) 1927. Chisholm, A. J.: Symptomatology and Treatment in Chronic Ulcerative Colitis, *Colorado Med.* 25: 28-30 (Jan.) 1928.
2. Larimore, J. W.: Chronic Ulcerative Colitis: Observations on Treatment by Diet, *Tr. Am. Gastro-Enterol. A.*, 1927, pp. 298-318.

culture. Good results were obtained in 4 cases in which *Str. hemolyticus* was present in the culture. In the majority of the cases in this group there was no improvement with azosulfamide therapy. Such after-effects as eruptions on the skin, nausea, vomiting, jaundice and diarrhea were observed on many occasions.³

TABLE 3.—Management with Sulfanilamide and Its Derivatives *

	Type of Colitis		Good	Results Fair	Poor
	Acute	Chronic			
Sulfanilamide	12	5	2C†	1C	12A† 2C
Azosulfamide	22	14	4A	1A	17A 11C
			2C	1C	
Sodium sulfathiazole	9	6	2A	4C	6A 2C
Patients in each group..	43	25	7A	1A	35A 15C
			4C	6C	
Total number of patients	68		11	7	50

* Summary: Sulfanilamide derivatives are most advantageous in cases of mild ulcerative colitis but too toxic in cases of acute involvement. Sulfathiazole gives the best results. Suggestion: The derivatives deserve a trial in the presence of *Str. hemolyticus*.

† C, chronic ulcerative colitis.

† A, acute ulcerative colitis.

As far as can be judged now, sulfathiazole seems to be the least toxic of the drugs for use in the treatment of chronic ulcerative colitis. It is not entirely free of toxic effects and there are individual idiosyncrasies, but nevertheless it is most advantageous. This drug, too, has demonstrated that sulfanilamide and its derivatives are most applicable in cases of mild ulcerative colitis and give the most promising results when *Str. hemolyticus* is present in the stool culture. Sodium sulfathiazole may be given intravenously to advantage if oral administration is suspended because of intolerance. The dose of the individual derivatives varies: with azosulfamide results have been obtained with a daily dose of 30 to 60 grains (1.9 to 3.8 Gm.), while with sodium sulfathiazole a dose of 1 Gm. every four to six hours for seven days may prove sufficient in alleviating an exacerbation of diarrhea. I have observed no advantage in the use of maximum doses.

Frequent observation of the patient's clinical course is essential to proper management. The most accurate index of the progress of the disease, however, is the amount of healing accomplished in the mucosa of the colon. This is determined generally by the clinical improvement in the symptoms but more accurately by repeated proctoscopic studies.⁴ My associates and I

TABLE 4.—Proctoscopic Follow-Up Study

Type of Patient	Number of Patients Studied Yearly							
	1	2	3	4	5	6	7	8
Unimproved	22	15	11	8	5	6	4	4
Improved	30	21	24	23	21	16	14	18
Cured	0	4	5	3	6	4	5	6
Dead	1	2	1	2	1	0	0	1
Total	53	42	41	36	33	26	23	29
Grand total—283								

have reexamined 283 patients (table 4) over a period of eight years and have classified them as unimproved, improved, cured or dead. The changes seen in the mucosa on reexamination were recorded and bacteriologic cultures were made so that a correlation of the proctoscopic findings might be established.

In the course of my studies I have learned that 20 per cent of the patients are eventually cured, 60 per

cent are definitely improved, 17 per cent are unimproved or have complications and 3 per cent die regardless of the type of treatment instituted.

The patients who cause most concern are the ones who become progressively worse regardless of the type of conservative management chosen.

True enough, conservative management at best is prolonged, tedious and difficult, gives no assurance at any stage that attacks will not recur and contains no absolute promise of a permanent cure. Of course, in cases of early, mild or moderately advanced involvement the results are more encouraging (20 per cent of the patients are cured and 60 per cent improved).

At present the most accepted opinion as to the surgical management of chronic ulcerative colitis is that if some drainage operation is undertaken an ileostomy is the procedure of choice.⁵

To get a cross section of opinion on this problem, I conducted a survey by mailing a questionnaire to one hundred gastroenterologists, proctologists and surgeons. In table 5 an abstract of the survey is presented.

The survey showed that of 286 ileostomies 11 were followed by a reanastomosis and that only 4 of the

TABLE 5.—Survey on Ileostomy

No.	Reanastomosis		Progress		Indications
	No.	Period	After Reanastomosis	After Ileostomy	
15	2	1-1½ yr.	1 fair	1 good	Polyposis, stricture
42	0	.		7 died	Irreparable damage, ileostomy a preparation to colectomy
35	0	.		1 died	Never in acute ulcerative colitis
8	0	.			Colitis resistant to all treatment; return of disease
4	1	2 yr.	1 poor	1 died	Polyposis, hemorrhage
5	0	.		1 satisfactory	
84	5	6 mo. 2 yr.	1 good	2 died 1 poor	Hopeless; male patients only
89	3	1 yr.	1	2 died	Acute colitis; few days of no response, obstruction
4	0	.		1 died	Obstruction
286	11		4	14 died	Stricture

patients made good or fair progress after the reanastomosis. Fourteen of the patients died before a reanastomosis was performed. The consensus was that ileostomy is indicated in the presence of polyposis, anatomic stricture of the colon beyond repair, abscess, malignant neoplasm, absolute obstruction, perforation or hemorrhage.

There were two sharply defined opposite opinions as to whether ileostomy should be performed during an acute exacerbation of chronic ulcerative colitis.

Among the reasons given why reanastomosis is not advisable was that the original disease invariably recurs. Another suggestion made was that ileostomy is not successful because it is not performed early enough in the course of the disease. Our experience shows (1) that the indications for ileostomy as given in the survey are satisfactory, (2) that patients with the disease in the acute stage should not be operated on, (3) that the disease recurs in the great majority of patients if reanastomosis is accomplished and (4) that it would be unwise to perform ileostomy during the

3. Streicher, M. H.: Clinical Course of Chronic Ulcerative Colitis (Based on 7,662 Proctoscopic Examinations), *Am. J. Digest. Dis.* 5: 362 (Aug.) 1938.

4. Streicher, M. H.: Proctoscopic Examination and Diagnosis and Treatment of Diarrheas, Springfield, Ill., Charles C. Thomas, 1940, p. 89

5. Rankin, F. W.; Bagen, J. A., and Bute, Louis A.: *The Colon Rectum and Anus*, Philadelphia, W. B. Saunders Company, 1915, p. 27.

early stages of the disease because in the early stages one can accomplish a cure or definite improvement without ileostomy.

Therefore, as the results after ileostomy are so poor, one would strongly suggest that conservative management be maintained as the treatment of choice and that ileostomy be reserved for the patient in whom the colon has undergone irreparable damage.

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ABSTRACT OF DISCUSSION

DR. MARTIN S. KLECKNER, Allentown, Pa.: The clinical history, the findings on proctosigmoidoscopic study and roentgenologic studies tell us how extensive the pathologic change in the colon has become. This is repeatedly necessary if we wish to note the progression or ameliorization of chronic ulcerative colitis. The problem of therapy is still unsatisfactory. Not knowing whether this disease is due to avitaminosis, a streptococcal infection or otherwise, we give these patients varied types of treatment, primarily medical, and often advise some surgical procedure as ileostomy in an effort to sidetrack the infection or remove it by colectomy. Our results have been gratifying at times, but in these cases, in 20 per cent of which operation is performed, we are disappointed by the end results. Every patient with chronic ulcerative colitis must be forcibly impressed with the importance of following the strict routine. It has been my practice at the onset to make repeated stool examinations in all cases in which any ulcerative process, other than a malignant growth, exists. Even in the absence of definite bacilli, cocci or amebas in chronic ulcerative colitis I routinely give these patients a course of emetine hydrochloride (hypodermically) $\frac{1}{2}$ grain (0.03 Gm.) twice a day for four days, followed by carbarsone (by mouth) in 4 grain (0.25 Gm.) capsules twice a day for ten days. After the last capsule and an interval of two weeks, the patient again receives the same treatment. Iron by mouth, vitamins B, C and D and calcium gluconate are always prescribed. The patient is placed on a low residue high caloric diet, given plenty of fluids, and told to inject 1 to 2 ounces of 1 to 5 per cent zinc peroxide or 6 per cent bismuth subgallate in olive oil into the rectum once or twice daily (after preliminary cleansing with warm saline solution). The patient is urged to retain the injection for at least an hour. When possible rest in bed, especially in the acute cases, is an important requisite. My apparent successes and failures correspond in almost like percentage with those of Dr. Streicher. The sulfonamides have been tried during the past year in a series of 12 cases with the following results: Two cases (six and eight months) showed a phenomenal clearing up of all symptoms by the use of sulfathiazole. One case (one and one half years) became entirely clear of ulceration. Eight cases showed no response to sulfonamide derivatives and it was necessary to stop its administration in 2 because of nausea. Sulfonamides should be tried in special cases, but the results obtained must not be too enthusiastically received.

DR. ZACHARIAS BERCOVITZ, New York: Dr. Streicher's results in chemotherapy are essentially in agreement with my own. He has called attention to the astounding results of treatment in some isolated instances. When dealing with a progressive disease such as chronic ulcerative colitis, we have no specific cure and, therefore, therapeutic results must be interpreted cautiously. The criteria for evaluation of any method of therapy in ulcerative colitis must include the following: 1. Before any new method of therapy is applied, the patient must be placed on the basic regimen and must be under observation over an adequate period of time. 2. Five years' observation under the new method of therapy is necessary. This allows for patients who improve spontaneously or who seem to improve with change of season or treatments. Also it allows sufficient time to secure an adequate series of cases. The five year rule gives the doctor time to discover whether or not his enthusiasm for any special therapy was justified. 3. Enough control cases must be treated on the basic regimen over the same length of time in order to allow for individual variations in the disease. The basic regimen which I observe in chronic ulcerative colitis

is essentially the same as Dr. Streicher's. Briefly it involves blood transfusions, dextrose infusions given in physiologic solution of sodium chloride and absolute rest in bed. 4. A diet high in proteins, vitamins and calories is prescribed, to be served in attractive form and given in adequate quantities. 5. Hydrochloric acid and pepsin for protein digestion are essential. 6. Adequate vitamins must be given. Liver extract does not cure chronic ulcerative colitis, but it should be included as a valuable adjunct in every regimen. The surgical problem in chronic ulcerative colitis is fundamentally to determine just when a patient should be operated on. We have not had the courage to face the stark reality that with the exception of a few cases which seem to improve spontaneously the disease is progressive in spite of the best management. We procrastinate until the patient's morale and vitality are gone and complications such as stricture or perforation force surgical intervention. Under these conditions the results of surgery cannot be what they should be, and restoration of bowel function is jeopardized. As soon as the true nature of the disease is established, ileostomy should be performed and then we may be able to offer some of the patients some hope of recovery.

DR. ISAAC R. JANKELSON, Boston: I have treated colitis in the same way as the author; however, I cannot record a 20 per cent cure either in the early or in the advanced stages of ulcerative colitis; in fact, I do not speak in terms of cure; I speak in terms of remissions for several reasons. The first reason is that no definite criteria exist by which one can establish a long distance prognosis in any case. Second, I have seen only too often patients who returned to the hospital with a recurrence often worse than the original attack. I have tried various so-called specific remedies proposed at various times, including the sulfonamide derivatives. My experience was that a few cases responded excellently, some fairly well, but the vast majority remained about the same; in fact, I know of only one cure of ulcerative colitis, and that is the surgical extirpation of the colon. In my own experience the operative mortality of an ileostomy is about 18 per cent and that is approximately the mortality reported from other clinics. Since the operation is technically simple, I believe that this mortality must be ascribed to the medical man and not to the surgeon, because the patient is sent to the surgeon altogether too late, at a time when even a simple surgical procedure will probably terminate fatally.

DR. J. ARNOLD BARGEN, Rochester, Minn.: I should like to put my remarks in the form of two questions: 1. Would it not be best to classify chronic ulcerative colitis according to etiologic types? 2. Would it not be best to attempt to treat these etiologic types specifically? I should like to amplify these questions. In recent years we have recognized a streptococcal ulcerative colitis, an amebic ulcerative colitis, a tuberculous ulcerative colitis, an ulcerative colitis due to vitamin deficiency, an ulcerative colitis due to the virus of lymphopathia venereum and a large number of patients with ulcerative colitis of unknown etiology. In my experience the streptococcal type constitutes by far the largest number of cases. The group in which the cause is still unknown has become smaller. Allergy plays a part in some cases of ulcerative colitis but I am not yet convinced that it is an etiologic factor in itself. Nevertheless, just as in infections in any other organ, the cause should be ferreted out first and the treatment instituted accordingly. I get the impression from the discussions that the tendency is to treat all forms of ulcerative colitis as if they were a single entity. Results of treatment will be infinitely better if this consideration is adhered to. A word about surgery: Patients with the streptococcal type of ulcerative colitis will rarely require surgery, but if and when the time comes for this because of one or many of the serious complications that occasionally afflict these patients or because of a very advanced disease, an ileostomy will be the only surgical maneuver to be considered. However, in the patients with ulcerative colitis of indeterminate etiology involvement of the bowel is often segmental and here ileocolostomy and subsequent partial resection of the colon may result in relief.

DR. DAVID J. SANDWEISS, Detroit: I have recently encountered a case of severe ulcerative colitis of long duration, treated without success by the usual methods, but elimination of milk from all elements of the diet resulted in improvement.

Milk always initiated an attack. I considered this a case of milk allergy. I wonder how many of Dr. Streicher's patients were found to be allergic to certain foods which, when removed, resulted in improvement of the condition.

DR. RACHELLE SELETZ, Los Angeles: I should like to voice my protest against the tendency to omit local therapy in colitis. I feel that a great adjunct to the therapy of certain types of colitis is lost here. It may sound reactionary, because in the past there have been a lot of deleterious effects from local therapy. That was because destructive medications, such as silver nitrate, were used. But in view of the fact that a lot of purulent material can collect behind the valves and because of the spasticity, the ulcerated surfaces are constantly touching one another and are further traumatized. I feel that if we can apply such soothing medications as mercurochrome (aqueous solution) and liquid petrolatum, we shall use them not as bactericidal agents but as bacteriostatic factors to seal over and protect the mucosa. At the same time these medications are inimical to bacteria and other organisms that may invade the traumatized mucosa. In this way we shall gain a lot by protecting the bowel from further injury.

OPERATIVE TREATMENT OF CEREBRAL PALSY OF SPASTIC TYPE

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AND

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In surgical procedures directed toward chronic disease impressions of results are often misleading. It is necessary to pause at intervals and do end result determinations on groups of cases to make decisions as to the efficacy of various procedures. It has seemed wise to us to review the orthopedic operations for cerebral palsy of the spastic type which have been done during the preceding fifteen years, 1925-1940, at the Children's Hospital in Boston. In addition to these cases, we have added certain ones in which operations were done by one of us at the Peter Brent Brigham Hospital.

The cases included are those which might be called by the orthopedist spastic paralysis and by the neurologist cerebral palsy of the pyramidal tract type. For practical purposes, we have emphasized the term spastic paralysis, since spasticity from whatever origin—intracranial or spinal—was the criterion by which patients were placed in this series.

In all there were 421 operations on 160 patients, the majority of whom were under 12 years of age. Only 20 were over this age at the time of the procedure. In 88 per cent of the operations sufficient data were available for an evaluation of the end result. In 219 of the 421 operations we were able to evaluate the result by a physical examination during the current year. The average follow-up interval was six years and eleven months.

Among the 160 cases there were 9 instances of monoplegia, 73 of hemiplegia, 51 of paraplegia, 2 of triplegia and 25 of quadriplegia.

Seventy-nine of the patients were considered mentally normal and 27 questionably so. Thirty-seven were definitely retarded and 30 were feeble-minded.

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From the Orthopedic Service of the Children's Hospital, the Peter Bent Brigham Hospital and the Department of Orthopedic Surgery, Harvard Medical School.

Before the data are considered from this survey, it is well to consider our attitudes regarding the position of surgical procedures in the treatment of spastic paralysis, since in general the patients were chosen for operation with these considerations in mind.

POSITION OF SURGERY IN TREATMENT

Operations, important as they are, should be considered as an adjunct to the general plan of therapy. By the nature of the process which interferes with the normal motor pathways, the patient is forced to depend on accessory tracts and to adjust his motor mechanism to an awkward type of innervation. Training of this mechanism is the primary treatment, whether directed or undirected. Surgical procedures, by reducing deformity, establishing better balance of muscle power, decreasing the spasticity of muscles and simplifying the problem of control, are often an indispensable part of the process of rehabilitation. In many cases, however, surgical procedures are not indicated either by the nature of the process or by the other delimiting factors.

Certain basic criteria must be established before decisions are made regarding an operation, all dependent on a thorough evaluation of the patient. The type of paralysis and the degree of motor inadequacy must be classified as accurately as possible. Occasionally this may be difficult, as in the differentiation between true athetosis and certain instances of spastic paralysis with definite accessory motor overactivity. Ordinarily observation for a short period enables the differentiation to be made.

It should be determined whether the patient has sufficient sense of balance to allow the intended result. If a patient cannot maintain a sitting position it cannot be expected that operations on the lower extremities will allow him to walk. There is ordinarily no need for correction of deformities in the lower extremity unless walking can be attained; the deformities will only recur.

The mental status of the patient is an important consideration in deciding whether an operation should be done and what procedure should be performed. Operations on the upper extremities are rarely indicated on patients who have gross mental deficiency, nor are finer adjustments in the motor mechanism of the lower extremities to be attempted on such a patient. However, operations should be performed on patients who cannot walk if it is felt that they may be made to walk either alone or assisted, even in the presence of well defined feeble-mindedness. The ability to walk facilitates their care, even if they are totally dependent in other ways.

For patients of low mental status definitive procedures in which the factor of muscle training is less important should be chosen. Prolonged expensive training and hospitalization are not indicated.

A detailed examination of the muscles should be made. Not only must the spastic muscles be recognized and charted but, as emphasized by Phelps,¹ the power of the other muscles must be evaluated and their degree of control noted.

The importance of evaluating the power of nonspastic muscles is emphasized by the fact that, as pointed out by Phelps,¹ certain antagonistic muscles may show great weakness and, for practical purposes, even complete flaccid paralysis. This is particularly true in the

1. Phelps, W. M.: The Care and Treatment of Cerebral Palsy. J. A. M. A. 111:1 (July 2) 1938.

muscles controlling the distal ends of the extremities. A flail paralysis may arise from a cerebral lesion, as pointed out by Fulton.² On the other hand, long continued deformity may of itself cause the stretched muscles to lose power, which power will return when the deformity is corrected. If there is actually a flaccid paralysis in the antagonistic muscles, merely relieving the spasticity will not solve the problem.

The age of the patient is a delimiting factor. A certain type of operation may be done as a temporary measure at a younger age to facilitate function, although it is anticipated that it will be followed by another when the patient is older.

In considering the operative approach in an individual case, one should remember that the correction of one deformity reduces the problem of the patient in his total motor control.

METHOD OF END RESULT EVALUATION

In this study primary attention was given to the classification of the result from individual operations, with secondary attention to the general effect. Three types of evaluations were made in all our cases.

TABLE 2.—Lengthening of Heel Cord (Total Operations One Hundred and Twenty-Five)

Result	Number of Operations	Per Cent
Excellent.....	12	11.2
Good.....	34	31.8
Fair.....	37	34.6
Poor.....	24	22.4
No examination	18	....

Rating of Improvement in whole group:

Total	++++	+++	++	+	0	No Examination
125	18	40	25	11	13	18

Of those rated poor:

75% were in children in motor status 1 or 2

50% were in feeble minded children

6 secondary lengthenings were done:

2 good; 2 fair; 2 poor

14 patients had arthrodeses later

Operations were classified under "excellent," "good," "fair," "poor" and "no examination." For this purpose an objective standard was established as a result from each type of operation, based on the postoperative function. Space does not allow for the description of the criteria used in establishing these standards in each individual procedure.

The second classification was a rating of improvement, which was founded on a comparison of the final status with the initial one. This was recorded as + + + +, + + +, + +, +, 0 and no examination; 0 improvement indicated that the individual was unimproved and + + + + indicated striking improvement.

As a further method of evaluation, patients were classified as to "motor status." This classification was based on the motor potentialities of the patient and took into consideration the amount of spasticity, incoordination, overflow responses and balance. Motor status 1 was the lowest classification and 5 was the highest. In this particular paper we shall refer to motor status 1 and 2 only.

OPERATIONS ON THE LOWER EXTREMITY

Of the 421 operations in this series, 379 were done on the lower extremity and 228 of these were done for deformities of the foot.

Equinus due to spasticity and contracture of the gastrocnemius and soleus were the deformities most usually found, but deviations of the foot in a lateral direction (varus or valgus), deformities of the toes and weakness of the muscles of dorsiflexion complicated the problem in many instances.

TABLE 3.—Neurectomy—Gastrocnemius—Stöffel (Total Operations Nineteen)

Operation On	Result				
	Excellent	Good	Fair	Poor	
" "	2	1	2	2	
" "	0	0	2	2	
Nerve with lengthening gas- trocnemius, upper	0	4	2	2	
Total.....	2	5	6	6	
Rating of improvement in whole group:					
Total	++++	+++	++	+	0
19	6	3	7	1	2

The criteria for an excellent operative result on the foot were active and passive dorsiflexion to approximately a right angle, no significant abnormality of weight bearing in a lateral direction and the ability to go up on tip toe. The maintenance of a take off is important. In many instances the general status of the patient precludes such a result.

Lengthening of Heel Cord.—Lengthening of the heel cord was done in 125 instances, in all by plastic lengthening (table 2). As may be noted, 12 of the operations were recorded as "excellent" and 34 as "good," in comparison with 37 which were graded "fair" and 24 "poor." A comparison of the "rating of improvement" shows that the patient in 13 instances was unimproved after the operation. Of those operations rated "poor," 75 per cent were on patients in "motor status 1 or 2," which is the lowest classification, and 50 per cent were on feeble minded children.

In 20 instances further operations were done to relieve the deformities of the feet. Six secondary operations for lengthening of the heel cord were carried out. Two of these were "good" subsequently, 2 "fair" and 2

TABLE 4.—Foot—Arthrodesis, Tendon Transplant (Total Operations Fifty-One)

Operation	Total	Result				No Examination
		Excellent	Good	Fair	Poor	
Triple arthrodesis alone	23	5	6	10	2	0
Countersinking (Brewster)	7	3	3	0	1	0
Subastragalar arthrodesis	2	0	1	0	1	0
Wedge tarsectomy.....	2	2	0	0	0	0
Arthrodesis with tendon transplant	14	4	5	0	1	4
Tendon transplant without arthrodesis	3	1	1	1	0	0
	51	15	16	11	5	4
Most common transplants						
Posterior tibial forward; extensor hallucis to first metatarsal; anterior tibial over						
Rating of improvement in whole group:						
Total	++++	+++	++	+	0	No Examination
51	14	11	15	2	5	4

"poor." After 14 of these operations it was found necessary to do an arthrodesis of the foot.

In those in the "poor" group, the most common finding was a recurrence of the equinus. In many instances this arose incident to weakness of the muscles

2. Fulton, J. F.: Paralysis of Cortical Origin: A Physiological Analysis of Flaccid and Spastic States in Monkeys and Chimpanzees. Proc. California Acad. Med. 4: 1, 1933-1934.

of dorsiflexion. Often postoperative care was not carried through in satisfactory fashion and the result was greatly compromised.

Neurectomy—Gastrocnemius.—Neurectomy of the nerves to the gastrocnemius muscle by the Stöffel³ technic was done in 19 instances only (table 3). In 2

than "fair," and the 2 cases which were rated as "poor" showed a calcaneus deformity of significant degree.

Of other procedures affecting equinus, lengthening of the upper end of the gastrocnemius was done in 15 instances. In 4 of these neurectomy to one head of the gastrocnemius was an accompanying procedure. The result from this operation will be discussed later.

Arthrodesis-Tendon Transplantation.—The cases which presented arthrodesis of the foot and those in which tendons were transplanted in this area were grouped together, since tendon transplantation usually was accompanied by arthrodesis. The results of the various procedures were considered separately (table 4). There were only 3 cases in which tendon transplantation was done without an arthrodesis.

Forty-eight arthrodeses were done. The predominant procedure was a triple arthrodesis of the Hoke⁴ type



Fig. 1—A, a boy aged 4 years and 2 months showing equinus deformity prior to lengthening of the heel cord. B, same patient four years later; recurrence associated with flaccid paralysis of the muscle of dorsiflexion and poor postoperative care.

the nerve to the two heads of the gastrocnemius was divided; in all others the nerve to one head only was interrupted. In those in which the division of the nerve was done without other procedures the results were

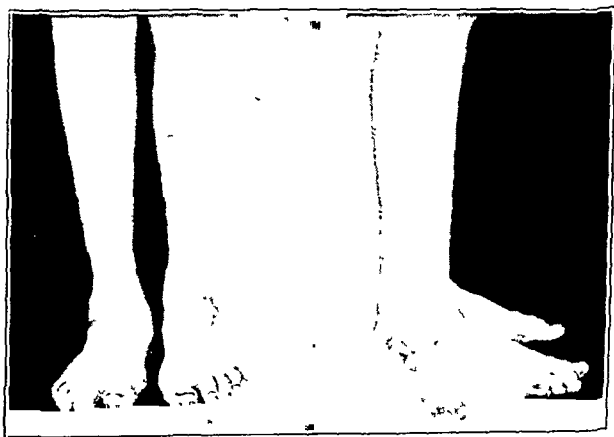


Fig. 2.—Same patient as in figure 1, showing position of feet at 9 years, fifteen months after triple arthrodesis on the right.

equally distributed among "excellent," "good," "fair" and "poor." The "excellent" results occurred in 2 cases in which the spasticity and deformity were mild. In those in which lengthening of the achilles tendon accompanied the division of the nerve, no results were better

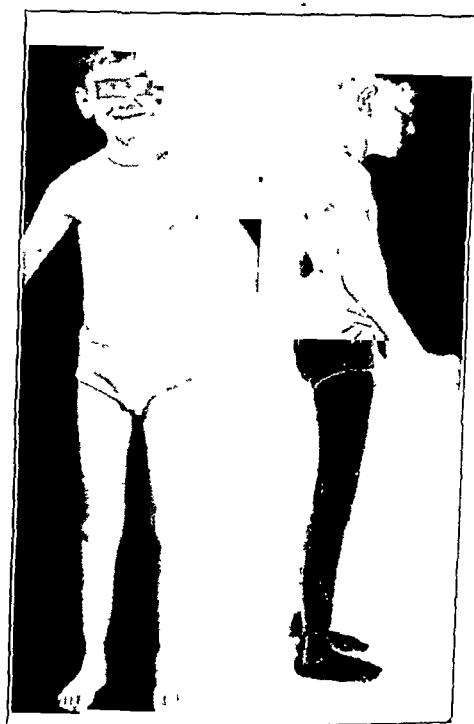


Fig. 4.—Boy aged 11 years unable to stand one year before. Status after bilateral adductor myotomy and obturator neurectomy, triple arthrodesis, lengthening of hamstrings and heads of the gastrocnemii. Walks alone. Significant decrease in accessory motions after operation.

or one of its variations. Seven countersinkings, as described by Brewster,⁵ were in the series. In 14 cases the arthrodesis was accompanied by tendon transplantation.

Analysis reveals that this group, that is, arthrodesis with or without transplantation, showed by far the best results of the operations that were performed on the foot. Of the total of 51 operations, 31 were recorded as "good" or "excellent." Countersinking and arthrodesis with tendon transplantation were the two procedures which gave the best results. The tendon transplantation most commonly done was the posterior tibial into one of the metatarsals. In 1 instance it was necessary to transplant tendons into the os calcis to relieve calcaneus which had followed a tenotomy, not a lengthening, of the achilles tendon.

³ Stöffel, Adolf: The Treatment of Spastic Contracture, *Am J Orthop Surg.* 10:4, 1913.

⁴ Hoke, Michael: An Operation for Solidifying Paralytic Feet, *J Orthop Surg* 3:494 (Oct) 1921.
⁵ Brewster, A. H.: Countersinking of the Astragalus in Paralytic Feet, *New England J Med* 209:71 (July 13) 1933.

Operations on the Foot.—A comparison between the various summary groups of operations on the foot is not possible without a consideration of the various indications and the position of the procedures themselves in the total picture. Lengthening of the heel cord and neurectomy of the supply to the gastrocnemius can correct only the equinus—the former by lengthening the muscle and decreasing its arc of contraction, the latter by actually decreasing the muscle mass which has the ability to contract. Neither can directly stabilize the foot in a lateral direction, nor can the element of foot drop be corrected if the anterior muscles do not develop power after the deformity is relieved. Despite this, they have a definite place in the total program.

In our cases, neurectomy of the gastrocnemius has not been employed often and has been used in instances in which the deformity was not severe. It is our feeling that unless the deformity is mild and can be corrected easily under anesthesia, other procedures are preferable to neurectomy.

Lengthening of the heel cord is an excellent procedure in many instances, provided certain rules are observed. The heel cord should not be lengthened too much and

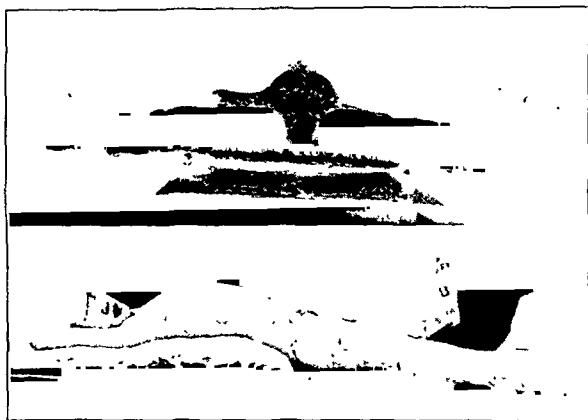


Fig. 7.—Hips held in abduction with bivalve plastic splint after adductor myotomy and obturator neurectomy.

must be as firmly sutured as any tendon transplant. The part should be immobilized at a right angle with the knee straight until firm healing has occurred. Following this, the foot should be maintained in the correct position, both by the use of night casts for a prolonged period and by exercises in dorsiflexion. Failure to do this was a common factor in the majority of our "poor" results. If the correction becomes stabilized, and if there is power in dorsiflexion, a "good" result may be expected. At any rate, it is a procedure which we do at an age when arthrodesis is contraindicated. It allows the progress of training and often solves the problem entirely. The fact that an arthrodesis may be necessary later does not indicate that lengthening of the heel cord has not had its place.

Arthrodesis is helpful in the older patient, either as a primary procedure or a secondary one, although it should rarely be done on children aged under 8 or 9 years. By attention to the pattern of arthrodesis the equinus as well as lateral deformity may be corrected. Foot drop and recurrent equinus may be obviated by a countersinking or by correcting the foot with the astragalus in full plantar flexion. If controllable muscles are available, their transplantation has solved the problem of foot drop and recurrence of

deformity in even better fashion. Arthrodesis of the midtarsal joints simplifies the control of the foot in a manner which cannot be accomplished in any other way.

DEFORMITIES OF THE KNEE

Operations about the knee in this series were designed to relieve flexion contraction. Hyperextension may be a feature of the gait in spastic paralysis, but unless it is a complication of an operative procedure it depends ordinarily on an equinus deformity of the foot with tight heel cords. Milder degrees of flexion contracture were not operated on in this series.



Fig. 8.—F. D., a girl aged 9 years and 9 months, with left hemiplegia, showing limitation of supination on the left side with inability to dorsiflex the hand.

The most frequent operation was lengthening of the hamstring tendons, which was carried out by one technic or another in 59 instances. In 11 the procedure was accompanied by division of the iliotibial band and intermuscular septum after the technic of Fitchet.⁶ In the earlier cases of the series, tenotomy of the hamstrings rather than plastic lengthening was the rule. Thirty-five operations were done in this fashion (table 5): Lengthening of the hamstrings in a plastic manner was done in 24 instances.

Of the whole group, independent of method, the results in 11 cases were "excellent," 21 "good," 9 "fair" and 16 "poor" and in only 2 was an end result evaluation not possible.

Again the general motor status and the mentality of the patient were prominent factors in the end result. Of those rated "poor," 87 per cent were in patients with "motor status 1 or 2" and 63 per cent were in feeble-minded patients.

In this series the procedure giving the best results in flexion deformity of the knee has been a combination of lengthening of the hamstrings with a lengthening of the tendinous origin of both heads of the gastrocnemius.⁷



Fig. 9.—Same patient as in figure 8. *A*, range of active supination ten months after transplantation of the flexor carpi ulnaris to the extensor carpi radialis longus. *B*, phantom photography showing amount of active dorsiflexion possible at this time.

DEFORMITIES OF THE HIP

Of deformities involving the hip joint, adduction, with a resultant scissors gait, is in the majority of instances the most disabling. This adductor deformity may be accompanied by abductor weakness. Flexion

6. Fitchet, S. M.: Flexion Deformity of the Hip and the Lateral Intermuscular Septum, *New England J. Med.* 209: 74 (July 13) 1933.
7. Green, W. T., to be published.

deformity of more or less degree is often seen, although its presence in severe degree is not common, unless the patient is older and has spent a considerable period without walking. Internal rotation is a frequent deformity, but ordinarily it is not severely disabling

TABLE 5.—Lengthening of Hamstring Tendons
(Total Operations Fifty-Nine)

Operation	Total	Result				No Examination
		Excellent	Good	Fair	Poor	
Lengthening of all hamstrings	9	0	7	0	2	0
Lengthening of all hamstrings plus both heads of gastrocnemius	15	7	6	0	2	0
Tenotomy of all hamstrings	30	4	8	6	10	2
Tenotomy of medial hamstrings	5	0	0	3	2	0
Total.....	59	11	21	9	16	2

In 11, iliotibial band and intermuscular septum (Fitchet) were divided
Rating of improvement in whole group:

Total	++++	+++	++	+	0	No Examination
59	20	13	8	4	10	4
Of those rated poor:						
67% were in children in motor status 1 or 2						
63% were in feeble-minded children						
Of those unimproved:						
All were in children in motor status 1 or 2						
60% were in feeble-minded children						

and may often be taken care of by training if the other deformities are corrected.

There were 77 operations performed for deformities of the hip. Adductor myotomy with obturator neurectomy by varying technics, which was done in 66 instances, was the most frequent operation (table 6). The procedure that was most used was neurectomy of the anterior branch of the obturator nerve accompanied by myotomy of the adductor longus and brevis and of a few fibers of the magnus. In only 2 instances was it described that both anterior and posterior branches of the obturator nerve were divided. Results from the operations for adduction deformity were disappointing and were contrary to our impression. Twenty-three of the 66 operations were recorded as a "poor" result, 20 as "fair," 11 as "good" and only 4 as "excellent." No examination was done on 8. Twelve were unimproved.

Sixty-one per cent of those in the "poor" group were in "motor status 1," but only 22 per cent were feeble-minded children. The reason for the "poor" result in all instances was recurrence of the deformity.

In an evaluation of the causes of the recurrence, three factors were determined to be in large part responsible:

1. The patient was not held long enough in the abducted position after operation.
2. Physical therapeutic measures were neglected.
3. The procedure was not extensive enough.

It is our feeling that in the adductor operations, as in all others, the parts must be retained for a considerable period in the corrected position at least part time. In practice this is accomplished mainly by the use of night casts; and it is our custom at this time to retain the parts in abduction, using two bivalved cylinders which are held apart by struts, in the fashion illustrated in figure 7. This is more comfortable than a spica.

It may be necessary to use this for many months in order to stabilize the position. Frequently there

is weakness of the abductors. Maintaining the corrected position and giving exercises in abduction allow this to be counteracted.

Of procedures carried out at the hip to relieve flexion contracture, fasciotomy after the manner of Ober⁸ was done in 3 cases; the Soutter⁹ operation was done once. All gave improvement. In 2 instances the origin of the tensor fascia femoris was transplanted backward on the ilium after the manner of Legg¹⁰ for internal rotation deformity and to give increased power of abduction. Both purposes were served in these 2 operations. Partial division of the gluteus medius and minimus after the manner of Durham¹¹ was done once in this series and resulted in improvement. Any procedure that weakens abductor power should be avoided.

As a total expression of the operative result in the lower extremities, an analysis was made of the group of patients who were unable to walk on admission. Thirty-one of the 160 patients were unable to walk prior to operation. Six of these were still unable to walk after the operation; 11 walked with assistance, that is with braces and crutches in combination or separately, and 9 were able to walk alone. On 5 there was no record. Of the 12 patients who walked with support before operation, 5 were able to walk alone, 4 still needed assistance and 1 was unable to walk. The latter had a progressive degenerative disease.

The average age at the time of operation of those not walking was 6½ years. Only 2 patients in this group were operated on before 3 years of age and 16 were operated on after 5 years of age.

All patients who were unable to walk postoperatively were quadriplegic.

THE UPPER EXTREMITY

The number of operations in the upper extremity was relatively small, 42 out of the total of 421. Pronation and flexion deformity of the wrist were the most frequent indications for operations.

TABLE 8.—Operation on Forearm (Total Operations Twenty-Eight)

Operation	Total	Result				No Examination
		Excellent	Good	Fair	Poor	
Neurectomy—pronator teres (Stöffel)	19	4	1	4	4	6
Tendon transplant, flexor carpi ulnaris to extensor carpi radialis longus	9	6	2	1	0	0

Rating of Improvement

	Total	++++	+++	++	+	0	No Examination
Stöffel—pronator....	19	2	3	3	3	2	6
Ulnaris transplant...	9	6	2	1	0	0	0

Three patients with a Stöffel operation after which little improvement was shown were definitely improved following ulnaris transplant

For pronation deformity, neurectomy of the branch of median nerve to the pronator teres was done in 19 instances. Of these, 4 were rated as "excellent," 1 as "good," 4 as "fair" and 4 as "poor," with final evaluation not being made in 8 (table 8). This procedure relieves

8. Ober, F. R.: Back Strain and Sciatica, *J. A. M. A.* **101**:1570 (May 4) 1935.
9. Soutter, Robert: A New Operation for Hip Contractures in Polio-myelitis, *Boston M. & S. J.* **170**:320, 1914.
10. Legg, A. T.: Transplantation of Tensor Fasciae Femoris in Cases of Weakened Gluteus Medius, *New England J. Med.* **209**:61 (July 13) 1933.
11. Durham, H. A.: A Procedure for the Correction of Internal Rotation of the Thigh in Spastic Paralysis, *J. Bone & Joint Surg.* **20**:229 (April) 1938.

the spasticity of the pronator teres and allows the patient to develop better supination. With removal of this difficulty in control, general function of the wrist and hand may improve.

Pronation and flexion deformity of the wrist are often associated with weakness of the extensors of the wrist as well as with spasticity and contracture of the flexor carpi ulnaris. In such instances tendon transplantation of the flexor carpi ulnaris to the extensor carpi radialis longus tendon may be done in such a manner as to promote both extension of the wrist and supination.⁷

We have been pleased with the results of this procedure and it has been much more satisfactory than neurectomy to the pronator teres. In 6 of the 9 operations done, the result is classified as "excellent," in 2 "good" and in 1 "fair." All patients showed improvement.

Transplantation of the flexor ulnaris tendon removes it as a deforming factor, both in flexion and in ulnar deviation, and allows it to assist in active dorsiflexion and supination.

Operations in the upper arm in our series were rare indeed. Four operations were done. One of these was a tenotomy of the insertion of the latissimus dorsi and teres major; 3 were neurectomies to major muscles. In all instances the neurectomies were only partial, that is the total innervation of the individual muscles was not divided. All those procedures resulted in improvement, as may be seen in table 9.

SUMMARY

1. A study has been made of the results of 421 orthopedic operations on 160 patients with spastic paralysis which have been done during the past fifteen years. In 88 per cent an end result classification has been made. "Spasticity," independent of its origin, has been the criterion by which cases were included in the group.

2. The patients operated on in this series were delimited by the attitude that:

(a) Surgical procedures are an adjunct in the general plan of therapy for spastic paralysis.

(b) Orthopedic operations on patients with cerebral palsy of the extrapyramidal type are not often helpful.

(c) Operations are indicated in only a certain proportion of spastic paralysis, depending on the nature of the deformity and the general status of the patient.

3. Two hundred and twenty-eight of the operations were done for deformities of the feet. Lengthening of the heel cords, arthrodesis and neurectomy affecting the gastrocnemius were done in that order of frequency. Arthrodesis gave the best results, although comparisons are not valid. Lengthening of the heel cord is a good procedure provided certain principles are followed. Tendon transplantation is helpful in deformities of the foot.

4. Lengthening of the hamstring tendons was the most common operation at the knee. The results were better in those instances in which it was accompanied by lengthening of the upper end of the gastrocnemius.

5. The results from obturator neurectomy with adductor myotomy were disappointing, although all but 12 of the 66 resulted in improvement.

6. Division of the branch of the median nerve to the pronator teres was helpful in correcting pronation deformity.

7. Transplant of the flexor carpi ulnaris to the extensor carpi radialis longus was an excellent pro-

cedure for flexion deformity of the wrist as well as pronation deformity. It has been found to be more useful than neurectomy of the pronator teres.

8. The operative results in those patients with quadriplegia were not as good as in the other groups. All patients who could not walk after being operated on were quadriplegic.

9. Certain general comments may be made regarding those operations in which the result was "poor":

(a) The majority of the "poor" results were in those who were feeble-minded or were in "motor status 1 or 2." In many the possibility of a "poor" result was considered prior to operation, but it was felt that an attempt should be made to give improvement. Certainly any error should be made in this direction rather than the other.

(b) The choice of procedure could be criticized in certain instances. Inattention to weakness in antagonistic muscles was a common mistake.

(c) Inadequate postoperative care and training were large factors in the "poor" group, in which the result should have been better. In this series, too brief immobilization in the corrected position was interpreted as the most frequent error in the postoperative regimen. We believe that intermittent support in the ideal position is desirable until the correction is stabilized, whether it requires months or years. The use of corrective casts at night should be a fundamental part of the routine.

The physical therapy during this period should emphasize, in addition to muscle training of the type usually prescribed in cerebral palsy, exercises to those specific muscles which oppose the deformity. Braces should be used if they are indicated, either as a temporary feature in establishing function or as a permanent measure if necessary.

ABSTRACT OF DISCUSSION

DR. BEVERIDGE H. MOORE, Chicago: This end result study has been excellently done. I have felt that these patients either improve a lot about the time of adolescence or they get a lot worse. The operations that my associates and I have used for these patients have been about the same as those of Drs. Green and McDermott. We do not do many tendon transplants in the muscles of the foot because in our hands they have not been very satisfactory. We prefer the arthrodesing operations; but one cannot do these until the patient has reached a certain stage of development in bone structure. During that interval we also do tendon lengthening, but we have been doing neurectomies of late and have thought that we were getting better results with them. We do them only as a matter of relaxing the muscles and do not use them if there is a structural shortening of the heel cord. The authors only accidentally mentioned one operation that we have found satisfactory and that is Durham's rotator section. We have seen a lot of improvement in the gait from the use of this simple operation. As for results in feeble-minded children, it has been and still is an open question in my mind whether it is worth while to operate on them; it is reasonably certain that we are not going to get a fair result.

DR. MANUEL E. PUSITZ, Topeka, Kan.: Surgery is but an incident in the treatment of cerebral palsy. Many failures can be traced to relying on surgical intervention and not on adequate follow-up. I was gratified to hear the authors stress postoperative splinting in these cases. One of the striking reasons for the reduplication of the operation is this lack of postoperative or, rather, postfixation support. I do not believe that the bad results are all in quadriplegias. Hemiplegias are more difficult to treat and offer the most difficult type of reconstructive problem. Surgery is merely a means to enable the physical therapist to apply his methods to train the patient. The object of tendon lengthening is to have the foot at a right angle so that the period of muscle training can begin early. I do not think that has been stressed enough. One must try as much as possible to simulate the normal tendency to learn to

walk at 2 and to speak at 5. By the time the child is 8 or 10 he has acquired a number of mental behavior patterns as well as motor defective mechanisms, which are very difficult to eradicate. A tendon lengthening in some of our cases is done as early as at 2 or 3, provided the patient does show evidence of a good mental status, and following the tendon lengthening a brace is applied for a prolonged period so that the physical educationalist can start in with those feet at right angles. The period of bracing may have to continue until such time as an arthrodesis operation may have to be performed, and, if the dorsal flexors by that time have not been developed, through some means these muscles can be made to act, and that forms part of our program in the muscle reeducation system. I have been amazed at the number of cases that show poor dorsal flexion action but if properly protected and properly braced will show a return of this motor power. If it does not then we do a triple arthrodesis; but the whole procedure is done as soon as possible to start the muscle education program, and surgical intervention is merely a step to that program.

DR. WILLIAM T. GREEN, Boston: I would agree heartily with Dr. Moore's comment that feeble-mindedness is a contraindication to operation provided he limits the statement to operations on the upper extremity. It seems to us that this does not apply to the lower extremity. If a patient who is unable to walk can be made to do so by an operation, it should be done despite the presence of feeble-mindedness. The ability to walk greatly simplifies the care of the patient even though he is dependent in other ways.

A CLINICAL ANALYSIS OF FIFTEEN THOUSAND CASES OF PNEUMONIA

AN EVALUATION OF THE EFFECTIVENESS OF VARIOUS THERAPEUTIC AGENTS

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Pneumonia has for at least thirty centuries defied medical science to control its ravages in the human race and year after year continues to be a leading cause of death. Unfortunately, no satisfactory methods of prevention have been proposed. Isolation of infected patients and carriers and proper care of the common cold would help somewhat but gives little hope of any outstanding success. Prophylactic immunization recently has shown promise in preventing the disease or at least in modifying its severity if it is contracted. This procedure, however, is not yet practicable for general use. There must be a temporary resignation to the fact that annually one half million residents of the United States suffer from pneumonia. However, a great deal can be done about the 100,000 deaths resulting annually from this curable disease.

Recent advances in therapy have placed at the disposal of every physician facilities for treating his pneumonia patient. With their proper use the case fatality rate will fall from approximately 30 per cent¹ (the generally accepted figure in untreated pneumonia) to 10 per cent or less, the figure that can be achieved with the use of well directed specific treatment. Adequate

therapy, therefore, if given to all patients with pneumonia, will decrease the annual pneumonia deaths in the United States from 100,000 to 35,000, a saving of 65,000 lives.

The introduction of chemotherapy has made this possible, for there is now a specific therapeutic agent which is readily available and inexpensive and can be safely used by every physician on every susceptible pneumonia patient. Uniformly good results are assured.

A pneumonia control study was begun in 1937 in Pennsylvania as a cooperative endeavor of the state department of health and the state medical society. Laboratory facilities as well as specific therapeutic serum in certain types were made available to the private physician for use in treating indigent patients with pneumonia. From a modest beginning for the year from July 1, 1937 to June 30, 1938, when only 1,200 patients were treated, the program has expanded to include 9,000 patients given specific therapy for the same period in 1939-1940 and 10,000 for the nine months following July 1, 1940, with a steady decrease in the case fatality rate in the treated series. In the short space of three years 9,000 more patients have been brought under specific therapy, and therefore, transferred from the 30 per cent to the 10 per cent case fatality rate. This was accomplished by an extension of our program and the introduction of chemotherapy. The effects on the disease are reflected in the total state mortality figures, which for the years beginning July 1, 1937 were 7,117, 5,869 and 5,003,² and 160 fewer deaths were recorded in the first eight months (later statistics not yet available) of 1940-1941 than for the same period for the previous year.

When compared to 8,600 annual deaths from pneumonia in Pennsylvania, representing the average for the decade 1929-1938, and an all time low of 7,355 deaths in 1933, these figures would appear significant.

Careful records have been kept during the study, and my purpose in this paper is to present an evaluation of the various therapeutic agents used.

SOURCE OF MATERIAL AND ANALYSIS OF CASES

The series of cases comprising this study includes only those in which treatment was given in the interval between July 1, 1939 and April 1, 1941. In every case the clinical diagnosis was pneumonia, confirmed in 64.6 per cent of the series by roentgenograms or by recovery of a type specific pneumococcus from either the sputum or the blood. The case fatality rate in this group was 8.95 per cent. In the remainder of the series (5,341 cases), henceforth referred to as unspecified, there was no specific laboratory confirmation of the diagnosis; this group consisted of cases in which (1) more than one specific type pneumococcus was found; (2) pneumococci were found but could not be typed; (3) no pneumococci were found but other organisms, such as staphylococci, streptococci and *Klebsiella pneumoniae*, were present, and (4) no attempt was made to recover a causative organism. A case fatality rate of 9.64 per cent testifies to the severity of the illness in the group. Its inclusion adversely affects the series.

The cases presented are representative of pneumonia as it occurs in the general population in the low income levels. The series comprises cases of primary, secondary, postoperative, complicated and uncomplicated pneumonia and includes cases involving home treatment (representing 24.3 per cent of the series) and hospital

Mr. E. Douglas Burdick, assistant professor of statistics at the University of Pennsylvania, checked the statistical method used in this paper.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

This study was made by the Commonwealth of Pennsylvania Department of Health under Dr. John J. Shaw, secretary of health, in cooperation with the Pennsylvania State Medical Society.

1. Heffron, Roderick: Pneumonia with Special Reference to Pneumococcus, Lobar Pneumonia. New York, Commonwealth Fund, 1939, p. 657.

2. Tentative figures offered at times are not yet available.

treatment (representing 75.7 per cent). All age groups are included and for convenience of analysis have been divided as follows:

Under 2 years of age, 12.8 per cent of the series; 2 to 12, 15.8 per cent; 13 to 60, 52.3 per cent; over 60, 14.7 per cent, and age not stated, 4.3 per cent.

TABLE 1.—*Mortality Rates from Pneumonia*
(July 1, 1939 to April 1, 1941)

Therapy	Number of Cases	Deaths	Case Fatality Rate, per Cent
Specific serum	181	27	14.92
Sulfapyridine	9,195	745	8.10
Sulfathiazole	3,606	304	8.29
Sulfadiazine	52	6	11.54
Serum and sulfapyridine	1,456	183	12.57
Serum and sulfathiazole	331	68	20.54
No specific therapy	370	69	18.65
Total	13,251	1,402	9.19

Obviously, any attempt to regiment cases in so large a series embracing such a widely scattered area was impossible. An evaluation of the merits of sulfathiazole versus sulfapyridine and of the drug (either of these agents) versus the drug plus serum, therefore, will necessitate a careful analysis of the many factors which affect the prognosis. These factors are (1) the type of pneumococcus acting as the causative agent, (2) the age of the patient, (3) the incidence of bacteremia, (4) the incidence of concurrent diseases (heart disease, cancer and conditions requiring surgical intervention), (5) the incidence of complications (empyema, meningitis and others) and (6) the interval between the onset of the disease and the beginning of therapy. Considered in the light of these various factors, certain deductions as to the effectiveness of these various agents in reducing the mortality from pneumonia should be possible.

It must be assumed that the group receiving combined therapy was a less favorable one than the group for which chemotherapy alone was used. In the past certain conditions—advanced age, bacteremia and the presence of preexisting systemic disease—have been used as indications for combined therapy, and if a larger percentage of patients receiving combined therapy have these conditions the case fatality rates for the group will be higher. Careful consideration must therefore be given these factors in evaluation. It is my purpose to learn whether patients coming under this adverse heading show better results with serum in addition to the drug and whether the presence of any of these factors is an indication for combined therapy.

An average dose of 123,000 units of serum per patient was given to patients who recovered and 155,000 units per patient to those who died.

RESULTS OF THERAPY

Gross Mortality (table 1).—That all therapeutic agents used in the study are effective in reducing anticipated deaths from pneumonia is apparent from the total case fatality rate of 9.19 per cent. The results for sulfapyridine and sulfathiazole, as others have found,³

are similar, and the difference is of no statistical significance. Of great interest are the fatality rates in the group treated with both a drug and serum. As has been the experience of others,⁴ the case fatality rate is higher in this group than in the group given chemotherapy alone. Undoubtedly the patients given combined therapy were more severely ill. A careful analysis of this series should reveal the reason and also establish indications for the use of combined therapy versus chemotherapy alone.

EFFECTS OF TYPE INCIDENCE ON CASE FATALITY RATES

That the severity of pneumonia varies from year to year is a generally accepted fact. Of great importance in this regard is the type distribution.

Table 2 shows the type incidence and the fatality rates among 6,043 specifically typed cases.

Types I, III and II, in the order given, were most frequent, accounting for 50.2 per cent of the series. Types VII, VIII and IV made up an additional 20 per cent, a total of 70.2 per cent of the total typed cases. The remainder or so-called "higher types" comprised 29.8 per cent. These results compare favorably with previous reports⁵ and indicate from type incidence alone that pneumococcal pneumonia occurring during the period of the study was of the usual variety and severity.

TABLE 2.—*Type Incidence of Pneumonia in Pennsylvania*

Type	Number of Cases	Percentage of Total	Number of Deaths	Mortality, per Cent
I	1,271	21.03	91	7.16
II	816	13.50	56	6.86
III	944	15.62	154	16.31
IV	299	4.95	22	7.36
V	232	3.84	19	8.19
VI	187	3.10	19	10.21
VII	464	7.68	27	5.82
VIII	445	7.36	25	5.62
IX	74	1.22	9	12.16
X	45	0.74	1	6.67
XI	47	0.78	9	19.15
XII	63	1.04	8	12.70
XIII	59	0.98	5	8.47
XIV	173	2.86	11	7.51
XV	56	0.93	2	3.64
XVI	54	0.89	1	5.56
XVII	60	0.99	6	10.00
XVIII	96	1.59	11	11.46
XIX	138	2.28	11	7.97
XX	85	1.41	7	8.24
XXI	32	0.53	2	6.25
XXII	55	0.91	6	10.91
XXIII	69	0.99	8	11.59
XXIV	51	0.84	4	7.84
XXV	47	0.78	4	8.51
XXVII	47	0.78	1	2.13
XXVIII	25	0.41	2	8.00
XXIX	56	0.93	4	7.14
XXXI	26	0.43	4	15.38
XXXII	19	0.31	1	5.26
XXXIII	17	0.28	3	17.65
	6,043	100.00	541	8.95

It is apparent that certain types of pneumococci are associated with a higher case fatality rate than others, patients with type III pneumococcal pneumonia, for

3 Flippin, Harrison I., Reinhold, John G., and Schwartz, Leon. Sulfapyridine and Sulfathiazole Therapy in Pneumococcal Pneumonia. *J. A. M. A.* 116: 683-689 (Feb. 22) 1941. Long, Perrin H., and Haviland, James W. The Problem of Pneumonia with Reference to Chemotherapy and Serum Therapy. *Ann. Int. Med.* 14: 1042 (Dec.) 1940. Finland, Maxwell, Lowell, Francis C., and Strauss, Elias. Treatment of Pneumococcal Pneumonias with Sulfapyridine, Sulfathiazole and Serum, *ibid.* 14: 1184 (Jan.) 1941.

4 Finland, Maxwell, Spring, William C., Jr., and Lowell, Francis C. Specific Treatment of the Pneumococcal Pneumonias. An Analysis of the Results of Serum Therapy and Chemotherapy at the Boston City Hospital from July 1938 Through June 1939. *Ann. Int. Med.* 13: 1567 (March) 1940. Bullowa, J. G. M., Osgood, Edwin E., Bukantz, Samuel C., and Brownlee, Inez E. The Effect of Sulfapyridine Alone and with Serum on Pneumococcal Pneumonia and on Pneumococcus Infested Marrow Cultures. *Am. J. M. Sc.* 199: 364-380 (March) 1940. Finland, Lowell and Strauss.

5 Heffron. Pneumonia, p. 43. Reisman, H. A. The Pneumonia. Philadelphia and London, W. B. Saunders Company, 1938, p. 29.

example, showing a rate of 16.3 per cent as compared to 7.2 per cent for those with type I. Obviously, therefore, any series having a predominance of cases due to an organism responsible for a high fatality rate would suffer accordingly.

From table 3 it may be seen that the distribution by type and unspecified cases is comparable for sulfapyridine and sulfathiazole. As would be expected, the types for which serum has been used in the past and has proved efficacious predominate in the combined series.

rate of 28.1 per cent for type I lobar pneumonia in adults, 36.6 per cent for type II and 46 per cent for type III, shows that all the agents used in this series are effective in reducing deaths from pneumonia.

INTERVAL BETWEEN ONSET OF DISEASE
AND BEGINNING OF THERAPY

Patients with pneumonia treated early in the disease have a much better chance to survive. Table 4 demonstrates the advantages of early therapy; a case fatality rate of 7.59 per cent was obtained when treatment was

TABLE 3.—Pneumonia Mortality by Selected Types

	Sulfapyridine				Sulfathiazole				Sulfapyridine and Serum				Sulfathiazole and Serum				Serum			
	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate	Cases	Percentage of Total Typed Cases	Deaths	Case Fatality Rate
Totals.	9,195	...	745	8.10	3,666	...	304	8.29	1,456	...	183	12.57	331	...	68	20.54	181	...	27	14.92
Types																				
I.	509	17.59	27	5.30	161	15.15	4	2.48	445	31.16	41	9.21	80	24.54	9	11.25	60	33.90	7	11.67
II.	360	12.44	18	5.00	105	9.88	3	2.86	251	17.58	18	7.17	46	14.11	6	13.04	42	27.73	8	19.05
III	435	15.04	49	11.26	174	16.37	17	9.77	231	16.18	50	21.65	66	20.24	28	42.42	15	8.47	4	26.67
V, VII, VIII and XIV	631	21.81	31	4.91	245	23.05	7	2.86	289	20.24	28	9.69	65	19.94	11	16.92	38	21.47	2	5.26
Other types.	958	33.11	67	6.99	378	35.55	28	7.41	212	14.84	36	16.98	69	21.17	13	18.84	22	12.43	4	18.18
Unspecified	6,302	.....	553	8.77	2,603	...	245	9.41	28	.....	10	35.71	5	.....	1	20.00	4	.....	2	50.00
	Chemotherapy			Combined Therapy			Sulfadiazine			Other Therapy			Total							
	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate					
Total-Types	12,861	1,049	8.16	1,787	251	14.05	52	6	11.54	370	...	69	18.63	15,251	1,402	9.19				
I.	670	16.94	31	4.63	525	29.93	50	9.52	3	7.69	0	...	13	11.11	3	23.08	1,271	21.03	91	7.16
II.	465	11.75	21	4.52	297	16.93	24	8.08	3	7.69	0	...	9	7.69	3	33.33	816	13.50	56	6.86
III	609	15.39	66	10.84	297	16.93	78	26.26	2	5.17	1	50.00	21	17.95	5	23.81	944	15.62	151	16.31
V, VII, VIII and XIV	876	22.14	38	4.34	354	20.18	39	11.02	16	41.03	1	6.25	30	25.64	4	13.33	1,314	21.75	81	6.23
Other types.	1,296	33.77	95	7.31	281	16.02	49	17.44	15	38.46	3	20.00	44	37.61	5	11.36	1,698	28.10	156	9.19
Unspecified.	8,905	...	798	8.96	33	...	11*	33.33	13	...	1	7.69	233	...	49	19.37	9,208	...	561	6.09

* Includes cases in which more than one pneumococcus was isolated from the sputum

TABLE 4.—Mortality by Treatment—First Four Days and After Four Days*

	Sulfapyridine			Sulfathiazole			Totals for Sulfapyridine and Sulfathiazole				Totals of All Cases		
	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	% of Cases in Each Interval Group	Cases	Deaths	Case Fatality Rate
First 4 days	5,196	341	6.56	2,583	187	7.24	7,779	528	6.79	82.23	7,779	528	6.79
After 4 days.	1,122	159	14.17	559	64	11.45	1,681	223	13.27	17.77	1,681	223	13.27
	Sulfapyridine and Serum			Sulfathiazole and Serum			Totals for Sulfapyridine and Serum and Sulfathiazole and Serum				Totals of All Cases		
	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	Cases	Deaths	Case Fatality Rate	% of Cases in Each Interval Group	Cases	Deaths	Case Fatality Rate
First 4 days	974	112	11.50	235	42	17.87	1,209	154	12.74	84.96	8,988	622	6.92
After 4 days	152	37	24.34	62	20	32.26	214	57	26.64	15.04	1,895	260	13.72
											10,883	882	8.11

* Only those cases in which accurate information was available in the groups discussed were included in this table.

If only typed cases are considered, the case fatality rate for patients given chemotherapy alone becomes 6.3 per cent as compared with 13.7 per cent for those given combined therapy. The preponderance of unspecified cases is disadvantageous to the former group. Interestingly, they are higher in each instance in the combined series. It is obvious that type alone is not the factor responsible for the higher rates. All other conditions being equal, there is no type of pneumonia for which serum should be given routinely in addition to a sulfonamide.

Comparison of the results in the present series with results tabulated by Heffron,⁶ in which there was a

begun within the first four days of the disease, as compared to 14.97 per cent, the case fatality rate after the fourth day.

The same ratio holds for the group that was given chemotherapy alone and the group given combined therapy.

Predominance of patients treated after the fourth day would give adverse results in any given series. The slight difference in the percentage of patients treated within four days is advantageous to the combined therapy group (84.96 per cent compared with 82.22 per cent for the chemotherapy group). This factor is certainly not responsible for the higher case fatality rate in the combined therapy group.

6. Heffron: Pneumonia, pp. 664-667, 670.

EFFECT OF CONCURRENT DISEASES ON
CASE FATALITY RATE

Any patient who has a serious illness in addition to pneumonia is at a definite disadvantage, and his chances of survival are appreciably less regardless of the therapeutic agent used.

In 25.38 per cent of the cases listed in table 5 there was at least one other condition coexistent with pneu-

13 to 60 and over 60, the results were similar for the two series, slightly advantageous to the combined therapy group.

Case fatality rates again are lower in the chemotherapy group. It is apparent, therefore, that concurrent disease is not the factor responsible for the higher death rate in the combined therapy group and is not alone an indication for the use of combined therapy.

TABLE 5.—Concurrent Diseases by Age Group and Treatment *

	Sulfapyridine				Sulfathiazole				Sulfapyridine and Sulfathiazole				Totals †			
	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate	Cases with Accompanying Conditions	Percentage of Cases Showing Accompanying Conditions	Deaths	Case Fatality Rate
Totals	2,220	24.14	384	17.30	986	26.90	169	17.14	3,206	24.93	553	17.25				
Under 2	113	8.70	23	20.35	71	12.26	18	25.35	184	9.80	41	22.28				
2 to 12	157	9.22	0	5.73	61	10.63	2	3.28	218	9.58	11	5.05				
13 to 60	1,298	28.48	185	14.25	522	29.59	99	11.30	1,820	28.79	244	13.41				
Over 60	562	44.75	160	28.47	287	48.89	87	30.31	849	46.07	247	29.09				
Unspecified	90	23.62	7	7.78	45	27.78	3	6.67	135	24.66	10	7.41				
	Sulfapyridine and Serum				Sulfathiazole and Serum				Sulfapyridine and Serum and Sulfathiazole and Serum							
	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group
Totals	402	26.92	88	22.45	93	28.10	40	43.01	485	27.14	128	26.39	3,871	25.38	731	18.88
Under 2	2	8.70	0	..	0	0	0	..	2	7.14	0	..	192	9.82	42	21.88
2 to 12	8	14.29	0	..	1	9.09	0	..	9	13.43	0	..	237	9.82	13	5.49
13 to 60	253	23.67	42	16.60	60	24.79	20	33.33	313	23.87	62	19.81	2,237	28.04	327	14.62
Over 60	115	47.13	42	36.52	31	51.67	20	64.51	146	48.03	62	42.47	1,045	46.59	332	31.77
Unspecified	14	21.88	4	28.57	1	7.69	0	..	15	19.48	4	26.67	160	24.17	17	10.62

* Severity of disease within this group is apparently comparable for all series
† Totals include cases in which other therapy than that specified in table was used

TABLE 6.—Pneumonia Mortality by Age Groups

	Sulfapyridine				Sulfathiazole				Sulfapyridine and Serum				Totals *			
	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group
Totals	9,195	745	8.10		3,606	304	8.29		1,456	183	12.57					
Age group																
Under 2	1,299	107	8.24	14.13	579	52	8.98	15.79	23	7	30.43	1.58				
2 to 12	1,702	27	1.59	18.51	574	6	1.05	15.66	56	1	1.79	3.85				
13 to 60	4,557	322	7.07	49.56	1,764	109	6.18	48.12	1,069	166	9.92	73.42				
Over 60	1,256	275	21.89	13.66	387	133	22.66	16.01	244	64	26.23	16.69				
Unspecified	381	14	3.67	4.14	162	4	2.47	4.42	64	5	7.81	4.40				
	Sulfathiazole and Serum				Chemotherapy				Combined Therapy							
	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group	Cases	Deaths	Rate	Group
Totals	331	68	20.54	..	12,861	1,049	8.16	..	1,787	251	14.05	..	15,251	1,402	9.19	..
Age group																
Under 2	5	1	20.00	1.51	1,878	159	8.47	14.60	28	8	28.57	1.57	1,955	181	9.26	12.82
2 to 12	11	1	9.09	3.32	2,276	53	1.45	17.70	67	2	2.99	3.75	2,414	37	1.53	15.83
13 to 60	242	35	14.46	73.11	6,321	431	6.82	49.15	1,311	141	10.76	73.36	7,977	617	7.73	52.30
Over 60	69	31	51.67	18.13	1,843	408	22.14	14.93	394	95	31.25	17.01	2,243	538	23.99	13.71
Unspecified	13	0	..	3.93	343	18	5.31	4.22	77	5	6.49	4.31	662	29	4.38	4.34

* Totals include cases in which serum alone, sulfadiazine and other therapy was used

monia? The case fatality rate was 18.88 per cent, more than twice the rate in the overall series.

It is important to know what proportion of this series has been allocated to each type of therapy. The results again for sulfathiazole and sulfapyridine are comparable with an almost identical fatality rate in cases so complicated, 17.14 per cent as compared with 17.30 per cent. Only a slightly higher percentage of cases in the combined therapy group were complicated, 27.14 per cent as compared with 24.93 per cent. For the age groups

Of the deaths in the entire series, 52.01 per cent occurred in the group of patients having an associated illness in addition to pneumonia.

POSTPNEUMONIC COMPLICATIONS

The incidence of complications in the series was low and comparable for the sulfathiazole and the sulfapyridine treated patients and fairly so for the chemotherapy versus the combined therapy group. The former shows one or more complications in 9.31 per cent of the series; the latter shows 11.8 per cent. This slight difference can be anticipated on the basis of a

7 Concurrent diseases included pregnancy, puerperium, surgical intervention, heart disease, tuberculosis, diabetes, cancer and alcoholism

emic patients treated with either the drug alone or the drug combined with serum, the case fatality rate was 29.52 per cent as compared with 9.32 per cent in the nonbacteremic series. Obviously, again a group with a preponderance of cases showing this condition would suffer a severe penalty.

Quite by chance there were 188 patients with pneumococcic bacteremias in the combined therapy group and the same number in the chemotherapy group.

Table 7 presents a detailed breakdown of the bacteremic cases in the two groups. The case fatality rate in the combined therapy group is 31.9 per cent as compared with 27.13 per cent for the chemotherapy group. These results are comparable. The type distribution in the two groups shows no significant differences. The unspecified cases in the chemotherapy group tend to raise rather than lower the total case fatality rate.

Age distribution is almost identical for the two groups and age group for age group the case fatality rate is at least as low or lower in the chemotherapy group.

Complications of the disease and incidence of accompanying conditions or concurrent diseases, which previously have been shown to be important factors in prognosis, are comparable in the two groups.

Especially interesting are the results with type III organisms, which heretofore have been associated with an extremely high case fatality rate, 98.3 per cent in a series of 118 bacteremic cases reported by Tilghman and Finland.⁸ Fifty-two cases presented here show a fatality rate of 51.9 per cent, still a high rate but by comparison extremely low. An identical number of cases of type III pneumonia appear in each therapy group with a comparable distribution by age group. In every instance the fatality rates are as low or lower in the chemotherapy group. The percentage of cases associated with other illnesses as specified previously is identical.

Not shown in table 7 for the sake of simplicity is the effect of sulfathiazole and sulfapyridine on bacteremia. They were equally effective in controlling this condition. My results indicate that combined therapy is no more efficacious in bacteremic pneumonia than is the drug alone, and therefore its presence does not constitute an indication for drug and serum treatment.

A careful analysis of this series from the standpoint of the most important factors that can influence the prognosis in pneumonia has been made. A significant factor has not yet been found to account for the increased case fatality rate in the combined therapy group.

Certainly serum is not harmful in the treatment of pneumonia and, therefore, some reason for this difference must be present.

Bacteremia in pneumonia has been considered a prime indication for the use of combined therapy and, therefore, one should expect to find a much higher bacteremic incidence in the combined therapy group than in the chemotherapy group. Such is the case, for the combined therapy group shows bacteremia in 25.7 per cent of the cases in which culture was done as compared with 6.3 per cent for the chemotherapy group (table 8).

If one assumes that cases in which culture was done are representative of the combined therapy group and applies a correction factor to the chemotherapy group, making a hypothetical group with a comparable bacteremic incidence, then type for type, age group for age group, the case fatality rate becomes almost identical in the two therapy groups. Discrepancies as noted throughout the paper are eliminated and comparable

results in the two groups are now apparent. The major difference in the two groups is the bacteremic incidence. Since it has been shown that chemotherapy is as effective in this particular group of patients as in the group with combined treatment and that all other factors are relatively comparable, it would appear that the burden of proof of the advantages of combined therapy over the drug alone rests with those who advocate such treatment.⁹

UNTOWARD REACTIONS

The appraisal of the efficacy of any form of therapy must take into consideration the undesirable effects of the therapeutic agent itself. In this series severe toxic reactions of either of the chemotherapeutic agents have been infrequent and need not greatly concern the physician in making a choice of therapy for his pneumonia case.

As has been the experience of others,² vomiting has been less frequent and less severe with sulfathiazole than with sulfapyridine. Drug fevers and drug rashes were slightly more prevalent with the former. Anemia and leukopenia were less frequent among the patients treated with sulfathiazole.

Hematuria occurs with approximately equal frequency with the two types of treatment.

TABLE 8.—Mortality in Relation to Blood Cultures

	Positive Cultures			Percentage Positive	
	Cases	Deaths	Case Fatality Rate	Cases	Deaths
Chemotherapy.....	188	51	27.13	6.26	17.89
Combined therapy.....	188	60	31.91	25.68	42.86
Total.....	376	111	29.52	10.07	26.12

Three fatalities have been attributed to the use of the drug in 14,648 cases: One from exfoliative dermatitis following sulfathiazole therapy; one from obstructive uropathy and anuria following the use of sulfapyridine, and the third from leukopenia and acute agranulocytosis following the use of sulfapyridine.

Serum reactions were of the usual variety, frequency and severity in the series. One fatality was attributed to the serum used.

COMMENT

My concern in this paper has been an evaluation of specific therapeutic agents in the treatment of pneumonia. All agents reported herein have been effective in reducing pneumonia deaths.

From the material presented, it is apparent that the etiologic agent, the distribution of the pneumococcus type, the age of the patient, the presence of a complication of the disease, the presence of concurrent diseases, the interval between the onset of pneumonia and the beginning of therapy and the presence of bacteremia all exert a definite influence as to the ultimate outcome of the illness, regardless of the therapeutic agents used.

Little difference is demonstrable in the ability of sulfapyridine and sulfathiazole to influence the outcome of pneumonia under any circumstance. The case fatality rates in this series were comparable for the two drugs in a comparable group of cases. Sulfathiazole is probably the drug of choice, since vomiting, an undesirable side effect of chemotherapy, is encountered only half

9. The paper by Plummer and his associates (Chemotherapy versus Combined Chemotherapy and Serum, *J. A. M. A.* 116:2366 [May 24] 1941) read by the author after completion of this paper tends to confirm this impression.

as frequently as with sulfapyridine and is much less severe when it does occur. This is important to the practitioner, especially in his private practice. Drug fever and drug rash were more common with sulfathiazole; anemia and leukopenia were more common with sulfapyridine. Other toxic reactions were comparable. No difference was apparent in the relative influence of the two drugs on complications of the disease.

On the basis of experimental studies in animals and in vitro we were led to expect that a combination of serum and chemotherapy would be more efficacious than the drug alone. This finding is not substantiated in the series just presented. Our results do not confirm the generally accepted indications for serum therapy in addition to the drug.

At present I believe that the best method of therapy in susceptible pneumonia is that after collection of base line specimens (sputum and blood culture) sulfathiazole should be given. Patients who fail to respond to chemotherapy in from twenty-four to thirty-six hours should have serum in addition. Serum is of value in those cases in which untoward reactions from chemotherapy require its discontinuance early in the disease. Chemotherapy gives the best results when started early, and its use is indicated as soon as the diagnosis of pneumonia can be made.

Failures with any form of therapy still occur and are most frequent in infancy and old age, in patients treated late in the disease and in those with conditions complicated by other preexisting severe systemic illnesses. Less than 50 per cent of pneumonia deaths occur in otherwise healthy persons.

SUMMARY AND CONCLUSIONS

1. The case fatality rate in the series of 15,251 cases of pneumonia is 9.19 per cent. The vast majority of the patients were treated with sulfapyridine or sulfathiazole, either alone or combined with serum.

2. All specific therapeutic agents used demonstrated their ability to lower anticipated case fatality rates in any given group.

3. Sulfathiazole appears to be the chemotherapeutic agent of choice at the present time, showing an equal therapeutic effectiveness to sulfapyridine with fewer untoward reactions—particularly less vomiting.

4. No inclusive statement can be made as to any group of patients who should receive serum in addition to chemotherapy. The pneumococcus type alone, the age group alone, the bacteremias alone, or associated systemic diseases do not constitute an indication for combined therapy. Clinical judgment is essential, and for those patients extremely ill and in whom prompt recovery is necessary early combined therapy is probably indicated. Others should have serum in addition, if an early response to chemotherapy alone is not manifest or early toxic reactions require discontinuance of the drug.

5. Complications of the disease apparently are low in any specifically treated series of cases.

6. Severe toxic reactions of chemotherapy are infrequent and need not greatly influence the physician in choosing his therapeutic agent in pneumonia.

7. Early use of chemotherapy for best results should be stressed.

8. Sharp reductions in pneumonia deaths will result from extension of specific therapy to all susceptible pneumonia patients.

ABSTRACT OF DISCUSSION

DR. JOHN J. SHAW, Philadelphia: About three years ago the state of Pennsylvania inaugurated a new setup in pneumonia control programs. After careful planning and with the complete cooperation of the state medical society and its pneumonia commission the program began operation in the fall of 1939. It consisted in the establishment of one hundred and eighty pneumonia control stations conveniently located throughout the state. Each station was prepared to furnish the physician with serum in any type, sulfapyridine and any laboratory service necessary for proper diagnosis, or for observation of the patient while under therapy. Not knowing what therapeutic agent or combination of agents was most effective, all were made available. A public health education program augmented our pneumonia control efforts. Numerous educational talks were given to the lay groups, and many pneumonia symposiums were held in the county medical societies in order to bring every one up to date in the treatment of pneumonia. The first year of operation showed an overall case fatality rate of just over 10 per cent, which, when compared to the 35 per cent previously operative in untreated pneumonia, shows phenomenal progress. Pennsylvania in 1931 had the eighth highest death rate of any state in the United States; today it is forty-third. Complete team work between the state medical society and the state department of health insured the immediate success of this program. The results of our efforts have been described today by Dr. Stahle. Chemotherapy has made practical the treatment of the pneumonia patients at home. Ready accessibility and ease of administration will greatly increase the total number of cases coming under therapy. Ninety per cent of our pneumonia patients treated were hospitalized previous to 1939. In the past two years 50 per cent of them are being treated by their family physicians at home. The use of serum has gradually diminished since the advent of chemotherapy. On the surface this seemed to be a lamentable fact, but most recent material available shows no outstanding benefits for combined therapy over the drug alone. The experience of Pennsylvania's pneumonia program seems to concur with this impression. This program has proved conclusively that pneumonia mortality can be much reduced by giving adequate care to victims. Complete cooperation between organized medicine and public health medicine in pneumonia control programs will result in fewer pneumonia deaths.

DR. JESSE G. M. BULLOWA, New York: Dr. Stahle is to be congratulated on this analysis of a large group of patients; however, a fundamental requirement in statistical study is to make sure that the populations compared are essentially similar, and Dr. Stahle himself says that this has not been determined for his groups. There were probably many more less severely ill patients in the chemotherapy group than in the chemotherapy plus serum group, because it is probable that only the patients who were more severely stricken received serum and they received it when chemotherapy had failed, or very late in the disease or as a last resort. Accordingly, it is not fair to take the analysis at its face value and to conclude that serum plus chemotherapy was either without value or harmful. In my own smaller series, when chemotherapy and serum were given simultaneously the death rate was either the same as or lower than when only chemotherapy was given. One of the outstanding findings in Dr. Stahle's analysis is the difference in the death rate depending on the pneumococcus type in both series. Apparently this is evidence of the operation of immunity responses. Apparently chemotherapy only reduces the virulence of the invading pneumococcus so that the patient suffers from a milder disease of its specific type. With chemotherapy the usual general death rate is 8 or 9 per cent, which in part may be due to failure of the immunity mechanism in patients who die. They might have been saved by serum. By further analysis of his data Dr. Stahle may find a reliable evaluation of chemotherapy and chemotherapy plus serum, under various circumstances. It should be possible to compare the effect of the two therapies in early young patients, in early old patients, in late young patients and in late old patients. It should be determined whether the serum plus chemotherapy was given simultaneously or tandem or, as may have happened, largely

to moribund patients. There is no advantage in giving serum to patients whose own immunity has already secured recovery. These patients are not benefited by serum; they are going to recover in response to chemotherapy alone and swell the recovery in that group. Serum therapy reduced the gross mortality rate from pneumonia one half; chemotherapy reduced it another half. It is this quarter or some of it which may be benefited by the combination, adding augmented resistance to reduction of virulence.

DR. ADOLPH RUMREICH, Bethesda, Md.: Dr. Stahle's report emphasizes the desirability of a frequent evaluation of the various components of public health programs, and of prompt revision of such programs in the light of such studies and of technical advances in general. The Pennsylvania state program is impressive and undoubtedly has contributed to the reduction in recent years of the state's pneumonia mortality. It must be gratifying to Dr. Shaw to observe that the procedures pioneered in his state have recently been formally endorsed without essential changes by the National Research Council and adopted as prescribed routine in the army. The soundness of the program is attested by the change in Pennsylvania's relative rank in respect to pneumonia mortality, as pointed out by Dr. Shaw. This occurred in spite of the presence within the state borders of important segments of the two highest risk injuries; namely, steel manufacturing and coal mining. Unfortunately, most of the other states have not achieved a comparable improvement in this serious public health problem. Preliminary reports indicate that in 1940 more than ninety thousand persons died in the United States of pneumonia, a 14 per cent reduction over the year preceding the introduction of specific chemotherapy for pneumonia. This is far short of what we were led to expect and falls far short of realizing the potentialities of the weapons now at our disposal. Dr. Stahle has stated that one half of the deaths in his series were due to pneumonia without complicating disease. When we consider that his series embraces all age groups, and that probably over thirty thousand pneumonia deaths in the United States in 1940 were in the age group 15 to 64, we see that our complacency at present about the pneumonia problem is unjustified and that we have a long way to go before we can boast that all has been done that can be done to stop this serious waste of manpower.

DR. DALE C. STAHL, Harrisburg, Pa.: It must be admitted that a more severely ill group of patients were included in the series treated with combined therapy, and this report was presented with that supposition being stated. I do not advocate the complete discontinuance of specific antipneumococcus serum in the treatment of pneumonia. Certainly there are definite indications for its use, and the physician should be prepared to use serum should it become necessary. At the present time the importance of drug resistance is not known. There is no reason to believe that those patients whose infecting organism has developed a drug tolerance will not respond satisfactorily if specific antipneumococcus serum is given. As Dr. Bullowa points out, there are some patients who do not respond to drug therapy alone and with the added boost of specific serum might recover where otherwise they would not. It is extremely difficult, however, to say that any patient would have died had serum not been used or that any patient would have recovered had serum been used in addition to chemotherapy. Likewise, it is impossible to know what would have happened to the combined series group presented if the drug alone had been given or what might have happened to the series treated with the drug alone if combined therapy had been given. My purpose in this paper was to point out that too much serum is being given under the indications for combined therapy operative in the past. Dr. Bullowa mentioned that serum is often used on patients whose immunity mechanism has already done what the serum would do if given, and further administration is of no advantage. This series was presented to indicate what the results of therapy have been in a large group of patients. The final word with regard to the place of specific antipneumococcus serum in the treatment of pneumonia must come from groups working in carefully controlled clinics where all factors which are of importance in prognosis in pneumonia can be carefully evaluated.

ADYNAMIC ILEUS AND THERMAL INFLUENCES ON GASTRIC AND INTESTINAL MOTOR ACTIVITY

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OMAHA

GUY M. MATSON, M.D.

DETROIT

AND

JEROME HIRSCHMANN, M.D.

LOS ANGELES

The terms adynamic ileus and paralytic ileus are used to designate a condition characterized by distention and relative inactivity of the bowel. As implied by the latter term, there prevails an opinion that the condition is the result of paralysis of the bowel. This is implied also in much that has been written, and there have been statements from sources of authority that intestinal motor activity is totally or virtually suspended for many hours or even days after abdominal operations. These opinions, as will be shown, are not supported by factual evidence, either clinical or experimental.

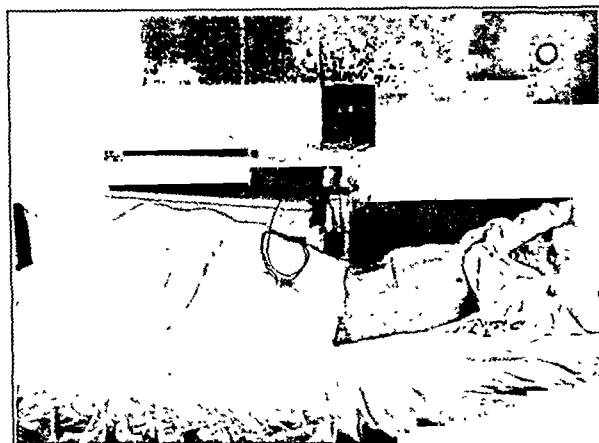


Fig. 1 (case 2).—Residual ileostomy following exteriorization resection of a gangrenous loop of the ileum. Apparatus for recording peristaltic activity. The tube emerging from the stoma connects an inflated balloon within the ileum to the U tube manometer. An identical tube and balloon are displayed on the sheet across the patient's thighs. Changes of pressure within the bowel are transmitted from the balloon to the ink writer through the U tube. The ink writer records the pressure changes on the kymographic drum. (Courtesy of Surgery, Gynecology and Obstetrics.)

As to clinical evidence, our interest in the subject was aroused by experiences with the Miller-Abbott tube. It was observed that this tube traveled down the small bowel as readily and rapidly in the patient with so-called paralytic ileus as in the patient with normal intestinal function. Obviously, for a state of paralysis this phenomenon presents an incongruous situation. For a logical explanation it must be assumed that in a state of ileus the stretching of the bowel wall from distention is in large measure responsible for the lack of motor activity. It is a well known fact that overstretched muscle loses much of its ability to contract. Furthermore, the function of the muscle is much impaired by the relative state of ischemia which results from the stretching of the blood vessels in the wall of the bowel. As the stretching is relieved by deflating the bowel through the indwelling tube, motor activity is promptly resumed. This we have verified by the flu-

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Read before the Section on Surgery, General and Abdominal, at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

roscopic examination of 2 patients who were given barium sulfate orally after the Miller-Abbott tube had traveled a few feet down the small bowel.

Another incongruous situation is observed in the relief of ileus which may follow the paralysis induced

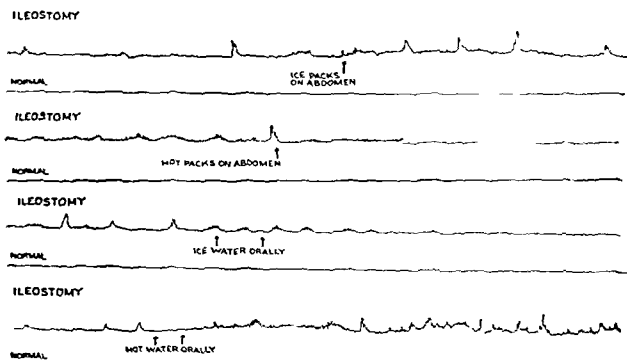
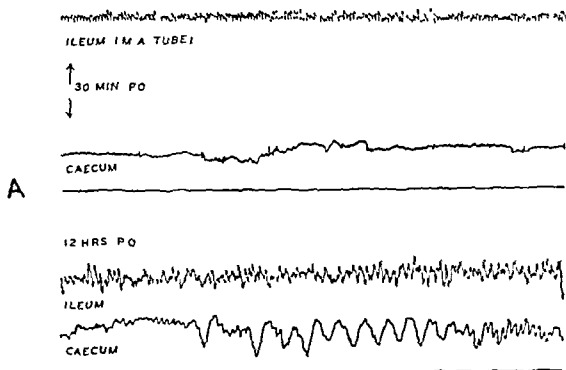


Fig. 2 (case 2).—Recordings made on the fourth and fifth postoperative days. The peristaltic contractions were infrequent although present and fairly vigorous. The application of ice packs to the abdominal wall increased the tonus of the bowel and the frequency and the amplitude of peristaltic contractions, hot packs inhibited motor activity, as did the ingestion of ice water orally, and hot water given orally stimulated motor activity. (Courtesy of Surgery, Gynecology and Obstetrics.)

by spinal anesthesia. Here is presented the paradoxical situation of relieving paralysis by inducing paralysis. From this bit of evidence the probable mechanism of ileus may be conjectured. By inducing paralysis, spinal anesthesia presumably releases the inhibiting action of the dorsolumbar sympathetic nervous system on the motor activity of the bowel and leaves the vagus unopposed. It is probable, therefore, that ileus results, at least in part, from an imbalance between the antagonistic actions of the dual innervation of the bowel.

LA RECTUM—CAECOSTOMY—RESECTION



STRANGULATED UMBILICAL HERNIA

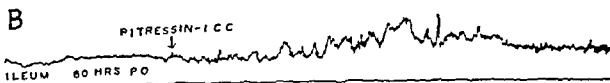


Fig. 3—A (case 3), simultaneous recordings of the motor activity of the ileum through an inflated balloon passed orally and of the ascending colon through a balloon passed through a caeco-tomy stoma. Peristaltic activity was definitely present, although of subnormal vigor, thirty minutes after operation. B, twelve hours the motor activity was in excess of normal. This evidence is not consistent with the theoretic statement that after an abdominal operation the bowel is totally inactive for many hours. C (case 4), a tracing made in a case in which adynamic ileus developed after reduction and repair of a strangulated umbilical hernia. Contractions, although feeble, are discernible. An effective dose of pitressin was followed promptly by a noticeable increase of tonus and of the amplitude and duration of peristaltic contractions.

Complete paralysis of the bowel does occur in the presence of diffuse or generalized peritonitis, and it is our opinion that the term paralytic ileus should be reserved for and applied only to this condition.

EXPERIMENTAL OBSERVATIONS

The motor activity of the stomach and the bowel is enormously influenced by many factors. Some of these, such as emotional influences, are difficult or impossible to control. For this reason, studies of motor activity are subject to gross errors of interpretation and from them conclusions can be drawn only in those instances in which controlled factors of influence repeatedly produce the same or consistent responses. With this as a criterion the following observations are reported.

As in some studies previously reported,¹ continuous kymographic recordings were made of gastric and intestinal motor activity. These recordings registered the variations in pressure exerted on indwelling compressible rubber balloons by the peristaltic contractions of the viscera studied. Variations of pressure on these inflated balloons were transmitted through the Miller-Abbott tubes to which they were attached and thence

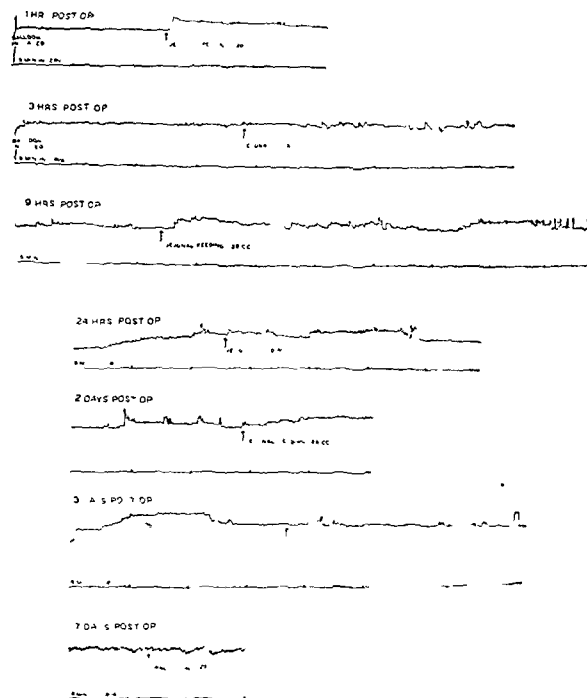


Fig. 4—Tracings from a tube indwelling the distal loop of the jejunum after an anterior Polya operation, showing greatly diminished motor activity during the first three postoperative days. By the fifth day the motor activity was normal and by the seventh day hyperactive. Peristaltic contractions, although feeble, were discernible at all times, beginning one hour after operation. Jejunal feedings in each instance increased motor activity.

through U tube manometers containing bromoform to ink writers which inscribed the records. The apparatus with a balloon in the ileum passed through an ileo-tomy stoma is shown in figure 1. For recording the activity of the large bowel the balloons were introduced through colostomy stomas, and for recording the activity of the stomach and of the small bowel they were introduced by means of nasoesophageal intubation.

ILEUS ASSOCIATED WITH PERITONITIS

Records were made in 2 cases of ileus associated with diffuse peritonitis. Brief histories follow.

CASE 1—A man aged 66 came under observation with diffuse peritonitis, resulting from appendicitis, of four days' duration. Death ensued twenty-eight hours later. The nonoperative treatment instituted included the passing of a Miller-Abbott tube for the purpose of applying continuous suction. The tube passed through the pylorus and was observed through roentgenograms

1. Bisgard and Johnson.² Bisgard and Nye.

to have passed some distance down the small bowel. Records made eighteen, twelve and six hours before death showed complete absence of motor activity.

CASE 2.—A man aged 26, critically ill with a strangulated internal hernia, a gangrenous loop of ileum and definitely established diffuse peritonitis, was operated on after one and one-half

The application of hot packs to the abdominal wall completely inhibited motor activity. Taking ice water by mouth likewise inhibited it, while ingestion of hot water increased it. These responses are shown in figure 2.

POSTOPERATIVE ILEUS

In previously reported studies² it was shown that the motor activity of the stomach and the bowel both during and after operation was influenced as much by the preoperative and postoperative medication and anesthesia as by operative trauma; also that the various anesthetics varied much in their effects on gastrointestinal motor activity. Ether, nitrous oxide and barbiturates have an inhibiting action, while spinal anesthetics, cyclopropane and avertin with amylene hydrate have either a stimulating effect or no appreciable effect.

Recordings of the activity of the bowel in 6 patients made during and at frequent intervals after clean and uncomplicated abdominal operations performed with one of the noninhibiting anesthetics at no time showed complete abolition of peristaltic activity and showed reduced activity for not more than twelve hours.

CASE 3.—A man aged 58 with an obstructing carcinoma of the rectosigmoid junction was relieved of obstruction by a cecostomy, and eight days later the rectum was resected in one stage with the patient under spinal anesthesia. The day

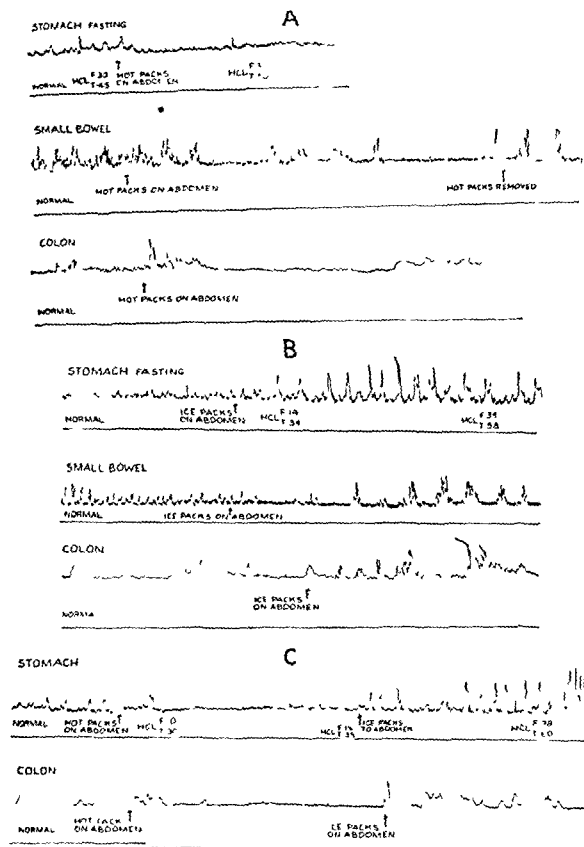


Fig. 5—A, recordings of motor activity of the stomach, the small bowel and the colon before and after covering of the abdominal wall with hot water bottles. After an interval of five to ten minutes, tonus became slightly diminished and peristalsis greatly inhibited in all three segments. The acidity of the gastric contents remained unchanged. B, the application of ice bags to the abdominal wall produced vigorous motor responses in the stomach, the small bowel and the colon, as indicated by an increase in tonus and in the amplitude and duration of contractions. These responses did not come on immediately but followed a latent interval varying from five to fifteen minutes. There was a big increase in gastric acidity. C, recordings of the effects on the stomach and the colon of following external hot applications with ice packs. Ice was applied immediately after removal of the hot packs. The inhibitory response to the hot applications was converted almost immediately to the motor response to cold. Furthermore, gastric acidity remained unchanged during the application of heat and increased greatly after the application of ice. (Courtesy of Surgery, Gynecology and Obstetrics.)

hours had been devoted to intravenous hydration therapy, a blood transfusion and continuous gastric suction. At operation the gangrenous loop was exteriorized and resected between clamps, the two ends being left as ileostomy stomas. The proximal clamp was removed after forty-eight hours, and recordings through this stoma were made daily. For two days there was no evidence of motor activity. On the fourth postoperative day the pulse rate was much reduced and the abdomen much softer and, in keeping with this evidence of resolution of peritonitis, fairly vigorous though infrequent peristaltic contractions were recorded. On that day and the following one the records displayed in figure 2 were obtained.

Since it had been observed in the studies mentioned¹ that the normal bowel made definite responses to thermal influences it was decided to test the response of this infirm bowel to the same agents. As in the normal bowel, the application of ice packs to the abdominal wall caused a prompt increase in tonus and in the frequency and amplitude of peristaltic contractions.

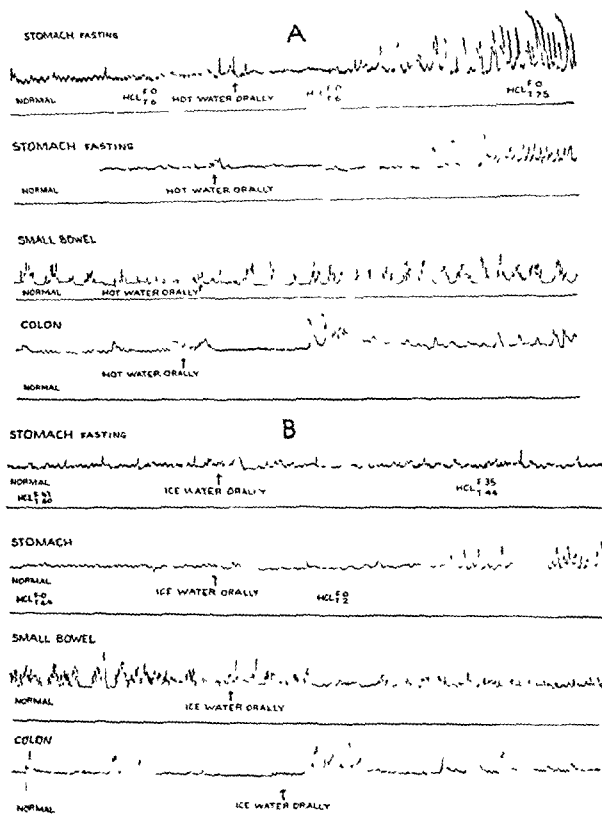


Fig. 6—A, hot water taken by mouth caused a vigorous motor response in the stomach and definite but less vigorous stimulation of the small bowel and the colon. The periods of increased activity were preceded by intervals of inhibition lasting from five to twenty minutes. B, the administration of ice water by mouth had little or no effect on gastrointestinal activity. Gastric acidity was decreased, as a result, presumably, of both dilution and inhibition. (Courtesy of Surgery, Gynecology and Obstetrics.)

before the resection was done a Miller-Abbott tube with a balloon had been introduced and carried into the ileum. A second balloon was threaded into the ascending colon through

2. Bisgard, J. D., and Johnson, E. K. The Influence of Certain Drugs and Anesthetics on Gastrointestinal Tone and Motility, *Ann. Surg.* 110: 802 (Nov.) 1939.

the cecostomy stoma immediately after operation, and recordings of the activity of the ileum and of the colon were made simultaneously. In recordings made thirty minutes and three hours after operation, motor activity, although of subnormal vigor, was definitely apparent. Twelve hours after operation and thereafter both ileum and colon showed activity in excess of normal. Two of these recordings appear in figure 3A.

While these studies were being carried out only 1 patient with uncomplicated and obstinately adynamic postoperative ileus was available for study:

CASE 4.—An obese woman aged 52 was operated on to relieve strangulation of a long loop of the ileum in an umbilical hernia. An alarming degree of distention developed fifty-two hours after operation, despite the application of constant suction through a Miller-Abbott tube in the proximal portion of the small bowel. This tube, which had been passed into the stomach before operation, was threaded through the pylorus into the jejunum at operation. Repeated enemas and 2 minim (0.1 cc.) doses of pitressin gave meager results. Finally a copious evacuation with a satisfactory diminution of distention followed the application of hot packs to the abdominal wall and the administration of 1 cc. of pitressin.

Records made during this period showed rhythmic peristaltic contraction to be present, though it was feeble. After the administration of the small doses of pitressin there was a slight increase in tonus and in the duration and amplitude of the

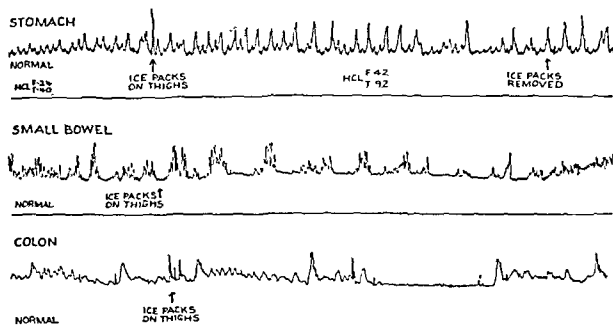


Fig. 7.—Ice packs applied to two thighs increased both gastric acidity and motor activity of the stomach. The ileum and the colon showed no definite or consistent response. (Courtesy of Surgery, Gynecology and Obstetrics.)

segmental contractions. After the large effective dose there was a big increase in tonus and in the amplitude and duration of peristaltic contractions, as shown in figure 3B. Obviously the muscularis of the bowel in this case was capable of vigorous contraction when effectively released from inhibition and stimulation.

In 2 cases the motor activity of the proximal portion of the jejunum immediately following gastrojejunal anastomosis was studied. In both cases an anterior Polya operation had been performed; in one a gastric carcinoma was resected and in the other a gastric ulcer. In each case, after the anastomosis had been completed the ballooned tip of the Miller-Abbott tube which had been passed into the stomach previously was threaded through the stoma into the distal loop of the jejunum for a distance of 10 or 12 inches (25 or 30 cm.). A second (Levin) tube, introduced into the stomach through a gastrostomy opening in the stump, was also threaded through the stoma and down the distal loop of the jejunum for a distance of approximately 16 inches (40.6 cm.). Through this tube hourly jejunal feedings were administered, being begun immediately after operation. Records of motor activity of the jejunum were obtained by means of the inflated balloon placed just proximal to the point where the feedings were delivered. The records (fig. 4) showed that the motor activity, which was barely perceptible one hour after operation and increased but feeble two hours

later, was fairly active within nine hours, normal in five days and hyperactive seven days after operation. Immediately after each feeding there was an increase in tonus and peristaltic activity.

An adequate explanation for the failure of a prompt return of normal motor activity in the foregoing 2 cases is not immediately apparent. There is good reason to believe that both the vagus and the sympathetic innervation of the bowel were much disturbed during the execution of gastric resection. There is also a theory that the stomach acts as a 'pacemaker' for much of the intestinal tract.

THERMAL INFLUENCES

A detailed account of the influence of hot and cold applications on gastric and intestinal motor activity and on the secretion of hydrochloric acid was made in a previous communication.³ A brief summary of these data follows. After establishing for each patient studied reasonably normal tracings from balloons indwelling the stomach and the small and the large bowel the following influences were brought to bear at successive periods of observation: (1) The abdominal wall was completely covered with hot water bottles for thirty minutes, (2) the abdominal wall was covered with ice bags for thirty minutes, (3) both thighs were covered with hot water bottles for thirty minutes, (4) both thighs were covered with ice bags for thirty minutes, (5) hot water was administered orally and (6) ice water was administered orally. During the period of recording the motor activity of the stomach, samples of the gastric content were aspirated and analyzed for acidity.

Complete series of records were obtained of responses of the stomach in 8 patients, of the small bowel in 6 and of the colon in 4. The responses were sufficiently consistent to be reported collectively as typical of the organ and the experimental factor. Heat applied to the abdominal wall inhibited motor activity of the stomach, the small bowel and the colon (fig. 5). Conversely, cold stimulated tonus and peristaltic activity. When heat or cold was applied directly to the wall of the stomach by having the patient drink hot or cold water the responses were reversed. Heat stimulated and cold had a slightly inhibiting effect on both gastric and intestinal motor activity (fig. 6). Hot applications on the thighs had no effect, and cold ones influenced only the stomach, producing a moderate motor response (fig. 7). Cold applications on both abdominal wall and thighs caused a big increase in both free and total hydrochloric acid.

From the physiologic data mentioned there may be obtained some guidance for the proper clinical uses of hot and cold applications. If it is beneficial, as is generally believed, to inhibit the motor activity of the gastrointestinal tract and thereby place it at rest as far as possible in the presence of inflammatory lesions, such as appendicitis and peritonitis, and of bleeding lesions, such as bleeding peptic ulcer, then hot applications and not ice bags are indicated. In the case of peptic ulcer the increase in gastric acidity following cold application to the abdominal wall also is undesirable.

During the past two years we have lavaged the stomach with ice water in 4 cases of actively bleeding ulcer. Either because of or in spite of this therapy the bleeding promptly ceased in 3 cases. Theoretically, direct chilling of the wall of the stomach should produce vasoconstriction (of bleeding vessels) in addition to lowering acidity and inhibiting motor activity.

3. Bisgard, J. D., and Nye, Dan: The Influence of Hot and Cold Application on Gastric and Intestinal Motor Activity, *Surg., Gynec. & Obst.* 71: 172 (Aug.) 1940.

The increase in gastric acidity which follows chilling of the body surface may explain the recurrence of peptic ulcer in the fall and the spring, when there are rapid and radical changes in temperature.

Throughout this discussion the term motor activity has been used and the term motility avoided. The records measured only peristaltic activity and tonus. Motility refers to the movement of gastric and intestinal contents, and this is dependent not only on peristalsis but on the patency of the sphincters and on coordinated activity between adjacent segments of the stomach or the bowel. Peristalsis is ineffectual when disorganized. In the normal process of both segmental and mass movements of intestinal contents the various segments of the bowel contract and relax alternately in well integrated fashion. As a given segment contracts and expels its contents the adjoining distal segment relaxes to receive it. Failure of this distal segment to relax not only interferes with the normal movement of intestinal contents but gives rise to cramplike pain, such as colic and gas pain. Hot applications are more effective than cold ones in relieving gastrointestinal cramps, because their inhibiting effect relaxes spasm and thereby facilitates coordinated activity.

In regard to the first fluids taken by mouth by patients after operation, we have observed no difference in the response to cool and to warm fluids except that cool ones are more palatable. Ice water, however, is definitely less well tolerated.

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ABSTRACT OF DISCUSSION

DR. JAMES M. WINFIELD, Detroit: With regard to the concept that the term "paralytic ileus" should be reserved for cases of peritonitis, I disagree with Dr. Bisgard and his co-workers. I have found that the balloon tipped long tube progresses satisfactorily in the presence of ileus associated with peritonitis, and accordingly the term denoting paralysis is not correct. I prefer to call ileus associated with peritonitis "patent inactive ileus" or "adynamic ileus." The relief of distention permits the bowel to become active, even though its entire power is not present. In the presence of ileus the use of heat either by packs or by a light cradle, in conjunction with tube decompression, not only may affect motor activity but, as Mueller has pointed out, may favor a more rapid and efficient return of blood supply to the impaired intestine. I do not favor the use of pitressin for effect on the small bowel, as it is questionable just how much influence this drug has on the jejunum and ileum, the large bowel primarily being stimulated. As to the effect of heat and cold applied externally to the abdomen, it is interesting to note that heat has been used in the presence of intra-abdominal infection for years in numerous clinics. No doubt the beneficial effect noted may be explained by the findings of the authors that external heat decreases gastrointestinal motor activity. As was mentioned in the paper, the delayed return of motor activity following gastric resection was notable and it was stated that this may be due to the fact that the stomach, in the role of a pacemaker for the intestinal tract, was profoundly affected. In some bile experiments on human beings, although the stomach showed some stimulated motor response to bile, the intestinal tract as a whole gives evidence of a considerable decrease in emptying time. Thus it is quite possible that the stomach partially initiates the effectual and coordinated intestinal activity. Also it is well known that the drinking of warm fluids favors evacuation of the bowel. Many of the points brought out in the paper have a direct application to clinical practice.

DR. CHARLES W. MAYO, Rochester, Minn.: In these days of costly therapeutic measures it is refreshing to hear a paper on an inexpensive one—a paper which demonstrates that it is not the degree of cost which is the gage of efficacy of a therapeutic measure but rather its judicious use. I was interested

to hear that cold on the abdominal wall or thighs caused large increases in free and total hydrochloric acid; that external temperature therefore may be the cause of exacerbation of duodenal ulcer in the spring and fall. Although it is true that heat and cold may be contributing factors, I believe one which is even more basically sound is that variation in water intake from the heat of the summer to the cold of the winter is of greater influence on gastric acidity, on the basis of dilution. We are familiar with the synergistic action of certain drugs, such as pitressin and morphine, on the small and large bowel; yet in this presented work there is no evidence that heat and cold have such synergy in relation to the small or large bowel. Believing in the law that for every action there is an opposite and equal reaction, I am prompted to the question What was the duration of the experiment of the application of heat and cold to the abdomen? For instance, if heat applied externally gives an initial quieting effect, might it not give, if continued, a stimulating effect, the time of the opposite action being an individual variable? It would seem that hibernation and quiescence might be possible examples of the effect of continued cold on intestinal peristalsis.

DR. J. DEWEY BISGARD, Omaha: In answer to Dr. Mayo's question, we did try to determine how long the effect of the thermal agents lasted and found that it lasted about an hour, as a rule. However, if after an interval a reapplication was made there was again a response but of a somewhat lesser degree.

"COLI METABOLIN" THERAPY IN HAY FEVER

PSYCHOGENIC BENEFITS

MARY HEWITT LOVELESS, M.D.

AND

HORACE S. BALDWIN, M.D.

NEW YORK

This investigation tests the recent assertion by Elsbach¹ that metabolic products of the colon bacillus have therapeutic value at least equal to that of specific inoculations in allergy. Elsbach reported that 70 per cent of his hay fever group were "cured" and another 28 per cent improved as the result of some nine inoculations of Coli Metabolin (Tosse). He held that this filtrate of *Escherichia coli* exerts a "desensitizing" influence through the sympathetic nervous system, obviates the need for diagnostic tests and preseasonal treatments and frequently affords relief after the second or third dose.

METHODS AND MATERIALS

After investigating the manufacturing process of Coli Metabolin (Tosse), and finding no contraindication to its use, we treated 20 ragweed-sensitive patients with the product.² Most of the courses were begun during the last week of August, the earliest being instituted on Aug. 22, the latest on Sept. 5, 1941. Although the subjects continued to make frequent visits for injections and observation until after October 1, so sharp a decline occurred in the atmospheric pollen content after September 20 (table 1) that clinical information collected after this date was disregarded.

The general plan was to give each patient 2 cc. of Metabolin under the skin daily until five or more doses had been taken or relief of symptoms occurred. As many as twelve consecutive injections were given at daily intervals in some instances. After the initial series

From the New York Hospital and the Department of Medicine, Cornell University Medical College.

1. Elsbach, E. J.: A New Treatment for Hay Fever, New York State M. J. 41: 1248 (June 15) 1941.

2. The Metabolin was supplied by E. Tosse & Co., Inc., New York City.

of daily injections, Metabolin was administered every one to three days. On the intervening days the patients received physiologic solution of sodium chloride in lieu of the metabolites or else were given no treatment at all. It was hoped thereby to evaluate the psychogenic effect of inoculation per se and to make due allowance for remissions, which occur spontaneously in hay fever.

Each patient kept a daily record of symptoms in terms of slight, moderate and severe hay fever and/or asthma. As a preliminary to statistical analysis, the data obtained from all subjects during the thirty day experimental period were segregated into four groups according to the relative height of the pollen count. Data pertaining to days on which there was little pollen in the air (twenty grains or less per cubic yard) were assigned to the first quartile. Observations which applied to days of increasingly high pollen count were allotted to the second, third and fourth quartiles, respectively, as shown in table 2. Data belonging to each quartile were then classified according to the patient's clinical response to the three conditions of treatment (Metabolin, physiologic solution of sodium chloride and no injection). The frequency with which symptoms were completely relieved, partially relieved, unaltered or made worse in relation to the three types of therapy has been recorded in tables 2 and 3. Finally, comparisons were made between the various sets of figures, differences being tested for significance by means of the chi square and probability (P) values.³ Sheppard's modification³ was employed to increase the accuracy of

or 23 per cent, of all Metabolin injections were followed by complete disappearance of symptoms within an hour. An equally good effect was obtained after eighteen, or 26 per cent, of the sixty-nine inoculations of physiologic solution of sodium chloride. When the

TABLE 2—Frequency with Which Various Clinical Results Occurred Following Inoculations of Metabolin, Physiologic Solution of Sodium Chloride and on Treatment-Free Days

	Metabolin	Physiologic Saline	No Treatment
First Quartile (20 or fewer grains of pollen per cubic yard of air)			
Complete relief	2	4	8
Partial relief	6	4	2
No change	19	14	0
Worse	5	0	0
Total	32	22	60
Second Quartile (22 to 57 grains of pollen per cubic yard of air)			
Complete relief	9	5	4
Partial relief	5	3	1
No change	23	8	41
Worse	1	0	2
Total	38	16	48
Third Quartile (63 to 126 grains of pollen per cubic yard of air)			
Complete relief	14	4	1
Partial relief	13	3	3
No change	30	5	12
Worse	5	0	0
Total	52	12	16
Fourth Quartile (144 to 332 grains of pollen per cubic yard of air)			
Complete relief	20	5	1
Partial relief	11	1	2
No change	26	13	8
Worse	9	0	0
Total	76	19	11

TABLE 1—Ragweed Pollen Grannules per Cubic Yard of Air (Report of Mr. David Morris based on slides exposed at New York Meteorological Observatory, Central Park, New York)

	August 1941	September 1941
1		332
2		81
3	1	18
4		12
5		168
6		217
7	12	192
8		73
9	3	57
10		126
11	2	37
12	16	24
13	10	5
14	6	20
15	6	30
16	17	24
17	25	18
18	8	20
19	2	22
20	40	14
21	6	5
22	14	6
23	50	6
24	117	6
25	63	10
26	207	2
27	243	3
28	116	7
29	63	5
30	225	6
31	144	(Discontinued)

the chi square test when the number of observations used for comparison was small (ten or less). Values of P which were greater than 0.05 have been regarded as of no statistical significance.

FINDINGS

Complete Relief.—Incidence: Table 3 shows that forty-five of a total of one hundred and ninety-eight,

3. Fisher, R. A. Statistical Methods for Research Workers, London, Oliver & Boyd, 1932

chi square and P values were determined, this difference between Metabolin and saline therapy was found to be of no significance, as table 4 A shows. This situation obtained in each of the quartiles of pollen count and in all quartiles combined. Of one hundred and thirty-five occasions when no therapy was given, fourteen, or 10 per cent, were associated with symptom-free periods which occurred spontaneously during the hours following the customary time of inoculation.

Duration: The relief was comparable in duration regardless of which inoculum was involved, one to seventeen hours being the range observed for each. In the case of Metabolin, the mean duration of relief following the forty-five efficacious inoculations was six and four-tenths hours as indicated by table 3, the average for all one hundred and ninety-eight Metabolin injections being only one and four-tenths hours. A slightly more lasting relief was associated with the eighteen beneficial saline injections, seven and three-tenths being the average number of hours which elapsed before symptoms returned. The average duration of relief for all saline solution inoculations given was one and nine-tenths hours per injection. The average duration of spontaneous remissions which occurred on days of no therapy was found to be six hours, a figure closely approximating that found for Metabolin and for saline inoculations.

Partial Relief.—Incidence: Tables 2 and 3 list a total of thirty-five occasions when Metabolin produced partial

relief within an hour, roughly 17 per cent of all metabolite injections thus being followed by partial improvement. In the case of saline injections, this percentage was 16, an almost identical incidence. The chi square and P values (table 4 B) showed clearly that no significance could be attached to these differences in incidence. Partial relief was noted after the customary hour of inoculation on 6 per cent of treatment-free occasions.

Failure to Alter Clinical Course.—Symptoms continued unaltered after approximately half of the Metabolin injections given and after 58 per cent of the control inoculations (table 3). When the chi square and corresponding P values were determined, the difference between the metabolite and control solutions in this respect was not found significant (table 4 C). When, however, the combined figures for the two types of inoculum were compared with that for days when no treatment had been given, a decidedly higher incidence of unchanged symptoms were found for treatment-free occasions (82 per cent, as shown in table 3). This suggested that inoculation per se altered the trend of symptoms. In order to determine in what direction the act of inoculation altered the intensity of hay fever, further comparisons were made.

INFLUENCE OF INOCULATION PER SE

Complete relief occurred after 23.6 per cent of inoculations of both types, whereas spontaneous remissions were noted on only 10 per cent of all treatment-free days. Most of the latter fell in the first quartile, when the atmospheric pollen was at low concentration. The chi square and P values determined for the second and third quartiles showed that complete relief followed inoculations significantly more often than it occurred on days of no therapy. Although this was not the case for the first and fourth quartiles, analysis of the combined data from all quartiles revealed that remissions were definitely increased in frequency if some inoculation had been given (table 4 D).

When the incidence of partial relief was studied, 17 per cent of all inoculations were found to produce this result, whereas only 6 per cent of treatment-free days

TABLE 3.—Frequency with Which Various Clinical Results Occurred Following Inoculation of Metabolin, Physiologic Solution of Sodium Chloride and on Treatment-Free Days

	Metabolin			Saline Solution			No Treatment		
	In stances	%	Hr	In stances	%	Hr	In stances	%	Hr
Complete relief	43	22.7	6.4	18	26	7.3	14	10.77	6
Partial relief	5	17.6		11	16		8	5.9	
No change	98	49.4		40	55		111	82.2	
Worse	20	10.1		0			2	1.48	
Total	198	99.8		69	100		125	99.97	

showed the spontaneous occurrence of partial improvement. In a few instances (10 per cent) the allergic symptoms were made worse by Metabolin inoculations. Exacerbation of symptoms after the usual injection hour was noted on 1.5 per cent of the occasions when no treatment was given but was not observed in relation to saline injections.

On the whole, inoculation per se appeared to benefit the allergic patients, approximately 40 per cent of all

injections of either Metabolin or physiologic solution of sodium chloride being followed by partial or complete disappearance of symptoms, whereas similar relief appeared spontaneously in only 16 per cent of the treatment-free days.

TABLE 4.—Significance* of Difference in Incidence of Various Clinical Results Following Metabolin, Physiologic Solution of Sodium Chloride and No Inoculation

	Pollen per Cu. Yd. of Air	Chi Square	P	Difference in Incidence
Test A—Incidence of complete relief after Metabolin compared with incidence after physiologic solution of sodium chloride	5 to 20 22 to 57 63 to 126	3.28 0.861 0.645	>0.05 >0.3 >0.7	Not significant Not significant Definitely not significant
	144 to 332	0.086	>0.7	Definitely not significant
	5 to 332	4.874	0.3	Definitely not significant
Test B—Incidence of partial relief after Metabolin compared with incidence after physiologic solution of sodium chloride	5 to 332	0.146	0.7	Definitely not significant
Test C—Incidence of unchanged symptoms after Metabolin compared with incidence after physiologic solution of sodium chloride	5 to 332	1.25	>0.2	Definitely not significant
Test D—Incidence of complete relief after either Metabolin or physiologic solution of sodium chloride compared with incidence on days of no treatment	5 to 20 22 to 57 63 to 126 144 to 332 5 to 332	0.416 4.27 36.73 0.7 41.76	>0.5 About 0.04 <0.01 >0.3 <0.01	Not significant Significant Definitely significant Not significant Definitely significant

* Determined by obtaining the chi square and P (probability) values

SUMMARY AND CONCLUSIONS

The claim of Elsbach that Coli Metabolin therapy is preferable to the usual antigen inoculation treatment of hay fever could not be substantiated. Although a degree of short lived improvement was observed among 20 ragweed-sensitive patients given an average of nine inoculations of Metabolin, a "cure" resulted in no instance and the transient benefits were duplicated both in degree and in duration by injections of physiologic solution of sodium chloride. Since the incidence of improvement was significantly greater when either solution was injected than when no treatment at all was given, it was concluded that the benefits of Metabolin therapy are of psychic rather than pharmacologic origin. We feel that there is no valid place for Coli Metabolin in the therapy of hay fever.

Chemical Elements.—Eighty-eight chemical elements have been isolated. Their separation by chemical means is sometimes easy, sometimes very difficult, and the best available tests differ greatly in sensitivity. Spectroscopic analysis provides a test for all constituents at once; but these tests too are unequally sensitive. Fortunately the two methods supplement each other. The composition of the earth's crust—above an arbitrary depth, such as ten miles—is well known. Oxygen is the most abundant element, whether by weight or by number of atoms. Silicon is next and then aluminum, iron, magnesium, calcium, sodium and potassium. These eight elements account for 98 per cent of the whole mass.—Russell, Henry N.: *The Cosmical Abundance of the Elements*, *Nature*, Nov. 29, 1941

Clinical Notes, Suggestions and New Instruments

ABERRANT PANCREATIC TISSUE WITH HYPERINSULINISM

FREDERICK GOETHE SMITH, M.D., MARION, OHIO

Aberrant pancreatic tissue was first observed by Klob in 1859. Faust and Mudgett¹ have recently reviewed the reported cases and added 1 of their own, bringing the total to 370. Apparently, through some error in embryologic development, pancreatic tissue may develop in various ectopic sites separate from the normal pancreatic anlage. It has been found most frequently in the stomach, duodenum and jejunum, fairly often in the ileum and Meckel's diverticulum and rarely in the gallbladder, omentum and mesentery.

Seldom of clinical importance, the gland tissue is usually an incidental finding at surgical intervention or autopsy. It may, however, be the site of inflammation and ulceration necessitating surgical removal, and in the ileum the condition has been responsible for intussusception. Roentgenologically it may produce a filling defect simulating a polyp or a malignant growth. The case to be reported is of interest in exhibiting definite symptoms of hyperinsulinism which were relieved by the surgical removal from the wall of the duodenum of a nodule of aberrant pancreatic tissue.

History.—Mrs. E. R., white, a housewife aged 45, was first seen Jan. 16, 1940. Her family history was irrelevant. She had had the usual children's diseases and at 30 years had scarlet fever and rheumatism and was confined to bed for the better part of a year. She was subject to urticaria produced by eating asparagus. At 27 her appendix was removed and at 29 a tonsillectomy was done.

The patient had not been well for twelve or fifteen years. She had been treated by many different physicians for a variety of complaints including sinus infection, "dropped stomach," sick headaches, cystitis, nervousness and "menopause." In 1935 examination revealed a slightly enlarged right kidney pelvis and mild secondary anemia; the anemia responded well to Bland's mass and diet. Since then she received a great deal of theelin, liver extract and vitamins. Five months previous to my first examination she was given high voltage roentgen therapy over the pelvis for a persistent menorrhagia, which resulted in complete cessation of the menses.

At the time of her examination her chief complaint was weakness, which was so pronounced that she was unable to remain out of bed for more than a couple of hours at a time. If she stayed up a little too long she would tremble all over and become breathless. Sometimes she would feel faint, but she never lost consciousness and never had a convulsion. Her appetite was good and she occasionally ate between meals; some-

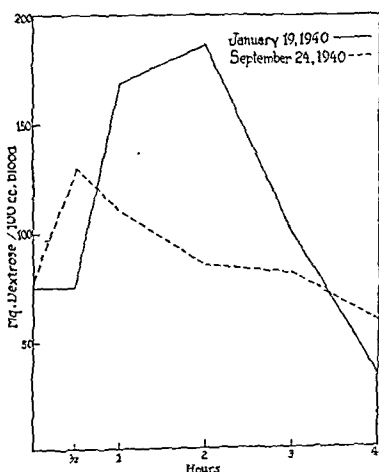


Fig. 1.—Dextrose tolerance test: Preoperative and postoperative response of the blood sugar to the ingestion of 75 Gm. of dextrose.

times she would awaken at night and eat. The only complaint of pain was a dull aching in the right flank posteriorly a little lateral to the costovertebral angle. There was some frequency and nocturia, and once or twice she thought that there was a little blood in her urine.

1. Faust, D. B., and Mudgett, C. S.: Aberrant Pancreas, with Review of the Literature and Report of Case, *Ann. Int. Med.* 14: 717-728 (Oct.) 1940.

Physical Examination.—The patient was rather poorly nourished, of asthenic habitus, subject to storms of emotional instability and depression but on the whole sincere and cooperative. She was 63¾ inches (162 cm.) tall and weighed 106½ pounds (48.3 Kg.). General physical examination did not reveal anything of importance.

Cystoscopy and retrograde pyelography demonstrated a mild trigonitis and a slightly enlarged right kidney pelvis with a descent of 2.5 cm. of the right kidney in the upright position. Comparison with roentgenograms made elsewhere in 1935 did not reveal any change.

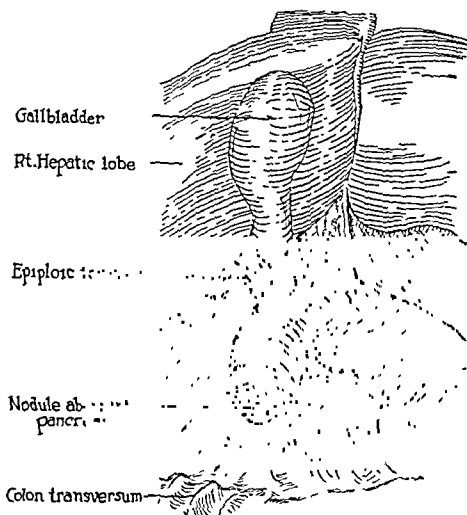


Fig. 2.—Diagrammatic illustration of the appearance of nodule of pancreatic tissue on the descending portion of the duodenum as seen at operation.

Fluoroscopy of the chest did not reveal any abnormality; barium meal showed normal filling and function of the gastrointestinal tract. Abnormality of the duodenum was not observed. A barium enema showed normal filling of the large bowel. Intravenous cholecystography demonstrated a normally functioning gallbladder.

Laboratory examination of the blood, urine, serum Wassermann and gastric contents was essentially normal. The basal metabolic rate was -13. The electrocardiogram was normal and the dimensions of the sella turcica were normal.

A dextrose tolerance test was made employing 75 Gm. of dextrose orally; the blood sugar rose in two hours from a fasting level of 77 mg. to 181 mg. and then fell sharply to 37 mg. at the end of four hours. At this time the patient was extremely weak, perspired freely and trembled. She asked for something to eat and was given a slice of toast, with relief of symptoms.

The patient was observed over a period of several weeks; frequent carbohydrate feedings were necessary to relieve the symptoms of weakness. An attempt was made to give all the carbohydrate in slowly assimilated starches and to feed principally fats and proteins, but this was only partially successful because of the patient's craving for sweets. Numerous blood sugar determinations were made, usually two or three hours after meals, with a finding of consistently low levels, ranging from 61 to 77 mg. per hundred cubic centimeters of blood. The only measure that afforded any significant relief from the extreme weakness was the frequent administration of food, and at one time she was taking as many as eleven meals in twenty-four hours. On the basis of the hypoglycemia, without demonstrable extrapancreatic cause, surgical exploration of the pancreas for a possible adenoma was advised.

On March 4 the patient was subjected to laparotomy. The abdominal and pelvic viscera were normal to palpation. The pancreas was exposed and its substance carefully palpated but nothing abnormal was found. It was then noted that on the descending portion of the duodenum just below the superior duodenal flexure there was a nodule under the serosa which resembled pancreatic tissue. The peritoneum was incised over this nodule and it was carefully dissected free, exposing the

puting outer surface of the still intact duodenal mucosa. All bleeding points were carefully ligated and the defect was closed with a double row of Lembert sutures. The abdominal wall was closed in layers in the usual manner.

The postoperative course was uneventful and the patient was discharged to her home on the twelfth postoperative day. Her progress to date has been satisfactory. The weakness of which she formerly complained is much relieved, she has gained 20 pounds (9 Kg.) and she no longer requires frequent feedings. Her dextrose tolerance curve appears to have been somewhat altered, no longer reaching such high early levels but nevertheless dropping to 62 mg. at four hours (fig. 1). The readings are given in the accompanying table.

Dextrose Tolerance Test: Response of the Blood Sugar to the Ingestion of 75 Gm. of Dextrose

Time	Blood Sugar, Mg. per 100 Cc. of Blood		
	Preoperative		Postoperative
	1/19/40	2/28/40	9/24/40
Fasting	77	100	79
30 minutes	77	178	129
1 hour	166	210	111
2 hours	181	171	85
3 hours	100	85	82
4 hours	37*	69	62

* Accompanied by symptoms of insulin shock.



Fig. 3.—Section through aberrant nodule showing apparently normal acinous tissue separated by broad strands of fibrous connective tissue (hematoxylin and eosin stain; reduced from a photomicrograph with a magnification of 120 diameters).

Pathologic Examination.—The tissue removed consisted of a small oval flattened piece of yellowish white tissue with the gross lobular markings of pancreas. It measured approximately 2 by 1.5 by 0.5 cm. and weighed 1.5 Gm. Grossly the cut surface was yellowish white and lobulated and appeared to be normal

pancreatic tissue. Microscopic examination showed pancreatic tissue consisting of acini and ducts, with a few well circumscribed islets and numerous diffuse groups of islet cells (figs. 3 and 4).²

COMMENT

Certainly one must be careful in the evaluation of clinical observations of this sort. The removal of so small a quantity



Fig. 4.—High magnification of the aberrant pancreatic tissue, showing diffusely scattered areas of islet cells between the acini (hematoxylin and eosin stain; reduced from a photomicrograph with a magnification of 480 diameters).

as 1.5 Gm. of pancreatic tissue, provided it is normal, seems scarcely sufficient to affect seriously the carbohydrate metabolism. Although in this case the number of well formed islands was not increased, we could observe a diffuse amount of islet cells between the acinous tissue. They were not very conspicuous or abundant and did not resemble islet adenomas. Their significance in the production of the clinical symptoms cannot be estimated. Fanta³ reported similar observations made on a man aged 37 who suffered from symptoms of hypoglycemia together with hyperchlorhydria. There was in his case a walnut size nodule of aberrant pancreatic tissue on the duodenum. The patient improved following removal of the aberrant tissue but still was subject to some symptoms of hypoglycemia. As remarked by Fanta, aberrant pancreatic tissue does not have the same significance as an islet adenoma. Nevertheless, any patient with hyperinsulinism who fails to exhibit an adenoma of the pancreas at surgical exploration should be carefully examined for the presence of aberrant pancreatic tissue.

SUMMARY

Surgical removal of aberrant pancreatic tissue from the wall of the duodenum produced relief of symptoms of hyperinsulinism.

240 East Church Street

2. Dr. Emmerich von Haam of the department of pathology, Ohio State University College of Medicine, Columbus, examined the microscopic preparations and made the photomicrographs.
3. Fanta, E.: Hypoglykämie bei Superazidität und Nebenpankreas, Endokrinologie 19: 34-38, 1937.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

HOWARD A. CARTER, Secretary.

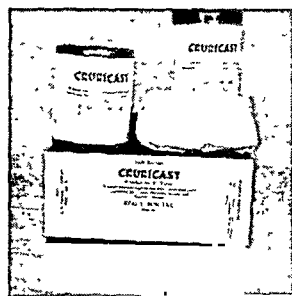
CRURICAST BANDAGE ACCEPTABLE

Manufacturer: E. K. Demmel Company, 59-11-67th Avenue, Ridgewood, Brooklyn.

Cruricast Bandages are gauze bandages impregnated with a zinc gelatin paste, prepared in the form of a moist roller bandage of a 10 yard standard length, wrapped in two sheets of waxed paper and packed individually or in dozen sealed containers.

The zinc paste used for the impregnation of the bandages has a low melting point and the formula is slightly varied for winter or for summer use to suit changes in climatic conditions. Made in 3 inch and 4 inch widths, the bandages have the white color of a zinc ointment. A dressing of gauze or stockinet should be applied over a cast made from a Cruricast Bandage to protect clothing.

Cruricast Bandages provide a compressive and supportive dressing which is soft and resilient. This dressing is porous to allow perspiration and evaporation and is of sufficient strength to prevent expansion from pressure of body heat. Data submitted by a reliable testing laboratory certifies to the strength of a three-ply cast made from a Cruricast Bandage.



Cruricast Bandage.

The average breaking load was warp 71.3 pounds and filling 42.3 pounds. The breaking load test was made by the "grab method." A sample was broken in the piece. Back jaws 2 inches wide, front jaws 1 inch wide, distance between jaws 1 inch, speed of pulling jaw 12 inches per minute. Capacity of machine 0-110 pounds. A sample was conditioned for four hours in

an atmosphere of 71 F. temperature and 65 per cent relative humidity before testing.

The bandages may be put directly on the skin or on ulcerated areas. The outer layers dry slowly; the layers next to the skin remain fairly moist, thereby retaining the medication in ointment form and prolonging the effect of the active ingredients. There is approximately 53 mg. of calcium chloride in each gram of bandage made up according to the summer formula and about 75 mg. of calcium chloride in each gram of bandage made up according to the winter formula. In the interest of national defense, the amount of zinc oxide in the formula has been reduced and kaolin has been substituted.

Cruricast Bandages will not dry as quickly as an Unna's boot prepared according to the National Formulary. Drying can be hastened by powdering with talcum or spraying with a solution of 1.5 per cent formaldehyde in water. A sprayer for this purpose is available. When formaldehyde is used, ulcerated areas and open wounds should be well covered to prevent contact with the solution.

The therapeutic action and effect of Cruricast Bandages are similar to those of an Unna's paste dressing. However, Cruricast Bandages do not require heating and their application is more simple for office use.

In the Council examination the Cruricast Bandages were used on ambulatory patients who attended the surgical clinic at a large hospital. The application of the bandages was found to be quite easy and they formed a soft elastic and flexible support. Compared with other bandages of this type on the market the Cruricast Bandage does not dry readily and, according to patients who have worn other types of zinc-gelatin bandages, they moisten the stockings more easily. It is for this purpose that a spray of 1.5 per cent formaldehyde is advocated, which complicates the procedure. Since the addition of kaolin the bandage has been somewhat drier.

The Council voted to accept the Cruricast Bandage for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry**REPORT OF THE COUNCIL**

IN JUNE 1941 THERE APPEARED IN THE NEW YORK STATE JOURNAL OF MEDICINE A COMMUNICATION ON THE USE OF A PREPARATION KNOWN AS COLI METABOLIN IN THE TREATMENT OF HAY FEVER. THE CONTENTS OF THIS ARTICLE WERE REFERRED TO SO OPTIMISTICALLY IN TIME MAGAZINE AND A NEWS COLUMN ON HEALTH THAT MANY INQUIRIES FROM THE PUBLIC AND THE MEDICAL PROFESSION HAVE BEEN RECEIVED AT THE COUNCIL OFFICE. THESE INQUIRIES INDICATE THAT A WIDESPREAD IMPRESSION HAS BEEN CREATED THAT THIS AGENT MUST BE OF DECIDED VALUE TO HAVE RECEIVED SO MUCH PUBLICITY. WHILE COLI METABOLIN (TOSSE) HAS NOT BEEN PRESENTED FOR COUNCIL CONSIDERATION, IT WAS NEVERTHELESS DEEMED ESSENTIAL IN THE INTEREST OF RATIONAL THERAPEUTICS FOR THE COUNCIL TO PUBLISH THE FOLLOWING REPORT.

AUSTIN E. SMITH, M.D., Acting Secretary.

COLI METABOLIN (TOSSE) NOT ACCEPTABLE FOR N. N. R.

A recent report¹ in the *New York State Journal of Medicine* presented an optimistic picture for hay fever sufferers by implying that an agent known as Coli Metabolin had been found to effect cures in a high percentage of cases. Shortly after this article appeared, its context was reproduced in *Time* magazine² and in a news column on health by Dr. Logan Clendenen with the inviting captions "Last Sniffle?" and "New Hay Fever Remedy Tested Successfully." Immediately members of the medical profession began to receive inquiries from the public. Obviously the publicity afforded through the press had not passed unnoticed.

The author of the paper which appeared in the *New York State Journal of Medicine* was Dr. Ernest J. Elsbach, a physician who received his medical training, according to available records, in Europe and who was granted a license in 1938 to practice medicine in New York State. According to Dr. Elsbach, Coli Metabolin (Tosse) has been successfully used in the treatment of "hay fever," "allergic asthma" and "allergic eczema." The Elsbach paper is short, consisting of only about one and a half pages; yet half of this brief report is devoted to a general discussion of allergic rhinitis. The remainder of the paper contains what is presumed to be a description of the agent and the results following its use; but the latter aspect received little detailed attention, considering the optimistic tone of the article. Noticeably absent is any mention of the use of controls or statistical analysis. The number of patients treated was 75, but no details can be found in this paper on any untoward reactions or on the criteria on which the claim of a "cure" was based.

The following statements regarding Coli Metabolin appear in an advertising circular issued by the Tosse Laboratories:

"... a new biological treatment ... which appears to act to a high degree as a stimulant to the natural functions of the sympathetic system. It consists of the metabolin of the coli bacteria, grown on specific culture media. The action of this natural metabolic product is by no means a non-specific protoplasm activation, because its effect is the same, even when the preparation is de-proteinized by heating. Its action on the sympathetic nervous system seems to be very pronounced and have a desensitizing effect. The best causal therapy is, of course, that of giving the appropriate remedy, after an exact diagnosis has been made, or of approaching the nervous system itself and bringing it into such a condition that it no longer reacts to any irritant. Many investigations and experiments have disclosed that in every infectious disorder of the body, the curative effect is exerted through influence of the nervous system on the endothelial system. The principal remedies, intended to stimulate the system to resist infection, are autohemotherapy, protein bodies of various kinds and other albuminous substances."

These statements, together with others of a similar indefinite speculative tenor, may serve to impress the more susceptible reader but will not be regarded by critical investigators as offering much information on the exact nature of the preparation or its specific mode of action. Final instructions in the circular read "During treatment, the patient should not

1. Elsbach, Ernest J.: A New Treatment for Hay Fever, *New York State J. Med.* 41: 1248 (June 15) 1941.
2. Last Sniffle? *Time*, June 30, 1941, p. 48.

change his place of residence, and, while no special diet is required, raw strawberries should be avoided. Abstinence from alcohol is essential."

Even the most casual reader will not fail to notice a similarity between certain statements appearing in the Elsbach article and in the advertising circular. In fact, direct quotations may be noted in several instances. Neither source, however, suggests what the exact ingredients of Coli Metabolin may be, except to refer to them as "metabolins." According to definitions in current dictionaries, metabolin can be considered as a rather broad term to designate any product of metabolism. It is obviously a term with "elastic possibilities."

Of the letters arriving at the Council office, not all have been inquiries, some have been complaints. One physician wrote to tell of a telephone call from a woman suffering from chronic asthma who wrote to Dr. Elsbach to inquire about the treatment; the letter received in the Council office states that this woman was informed that "it would be necessary for her to come to New York and his charge for testing and administering this product would be \$220 (cash)." Another physician, not a resident of New York State, wrote saying he was informed that the cost of purchasing the material (presumably a package containing 12 ampuls of 2 cc each) was \$22. A third physician, a resident of Chicago, inquired of Dr. Elsbach as to the cost of treatments and the possibility of success; Dr. Elsbach replied "I am absolutely not inclined to promise anything."

A number of physicians have forwarded to the Council office copies of the advertising circular. One physician in Chicago mailed a specimen of the package container with 2 ampuls of Coli Metabolin and a package insert. Imprinted on the glass ampuls is E. Tosse & Co., Inc., 2 cc Plus, Coli Metabolin For Intramuscular Injection. Made in U. S. A. Control 15C81.

The insert advocates the use of Coli Metabolin (Tosse) in the treatment of "hay-fever and allergic asthma" and states that the product is "a solution of the products of the metabolic processes of E. coli. Their metabolism is influenced and controlled by the enrichment of their culture medium by the use of ascitic fluid and sugars and by the differential procedures in their culture. The final product is a solution of the filtrable and soluble solution. The final product is a sterile mobile liquid, containing no coli organisms." Under a section entitled Indications and Administration there appears the statement "Although no definite statement can at present be made as to the etiology of vasomotor rhinitis and related allergic manifestations, the use of Coli Metabolin Tosse is predicated upon the belief that allergic manifestations may be neurogenic entities, intimately bound up with the physiology of the sympathetic nervous system."

Stamped on the circulars and inserts is the statement to the effect that Coli Metabolin is available in New York State only, as it is not sold in interstate commerce. It is the understanding of the Council that in May 1937 E. Tosse and Company, Inc., informed the Division of Biologics Control, National Institute of Health, that it had "acquired the manufacturing rights for the preparation of 'Antigens of Coli Bacteria'" and inquired with respect to the requirements for a license for the product and in 1941 submitted formal application for license. License has not been granted because the firm "failed to present evidence of the therapeutic or prophylactic value of the product."

While E. Tosse and Company confines its claims for Coli Metabolin to its use in allergic conditions it is interesting to note that in 1938 a German firm, Leimwerk Dr. Ernst Laves, Hanover, Germany, applied for a license for "Coli Antigen Laves." The latter firm was not granted a license either. The following summary of the claims made by the German concern has been supplied to the Council office:

Reduction of 'red blood pressure' but not 'white blood pressure', reduction of the rigidity in multiple sclerosis, relief of spasm in spastic constipation, spastic gall bladder affections, singultus, meteorism, essential hemorrhoid disorders included under the term 'Hepatovegetopathy', angina pectoris, hay fever, regulates the vegetative nervous system, a reciprocal action with the glands of internal secretion, bronchial asthma, vasomotor cardiac weakness, spastic gall bladder disorder."

A third product, known as Mutaflor, is also prepared from B. coli. A summary of the claims which are made in a circular prepared by the firm Hageda A. G., Berlin, was supplied to the Council office at the same time as the summary of the claims for Coli-Antigen Laves. The conditions for which Mutaflor was advocated are:

"(1) Chronic catarrh of a large intestine (colitis), (2) Digestive disturbances with abnormal putrefaction or fermentation processes (dyspepsia), (3) Ulcers of stomach and duodenum, (4) Chronic constipation (atonic and spastic), (5) Constant carriers of infectious germs, (6) Acute and chronic dysentery, (7) Diseases caused by intestinal poisons, localized in other organs: (a) cutaneous eruptions including urticaria and crustacea, (b) chronic diseases of the joints, (c) ischias, (d) pernicious anemia, (e) inflammation of kidney pelvis and bladder, (f) many cases of disturbances during menstruation and menopause, (g) migraine, (h) high blood pressure, (i) many cases of sleeplessness and heightened mental fatigue. Furthermore, Mutaflor may be of assistance without direct effect on the main disease in cardiac trouble with intestinal flatulence (stopping of attacks), and in the 'toxic intestinal catarrhs' of lung tuberculosis, etc."

These are indeed impressive claims for an article the exact nature and mode of action of which appears so vague.

No product of E. Tosse and Co., Inc. stands accepted by the Council for inclusion in New and Nonofficial Remedies. Recent advertising indicates that the firm markets a number of preparations bearing such noninformative names as Arso-plasma, Bismogenol, Ekzebol, Kavalactol, Nitroscleran and Strophalen. Advertising material in the Council office reveals that in 1931 Bismogenol was a suspension of bismuth salicylate in oil for "the treatment of syphilis in all stages", Nitroscleran was "sodium nitrate combined with inorganic (Trunzeck) serum" for the "treatment of hypertension, incipient arteriosclerosis, coronary sclerosis, angina pectoris, intermittent claudication", and Ekzebol was a "combination of bromine and strontium in an isotonic sodium chloride solution" for the "treatment of all forms of eczema, urticaria, psoriasis, toxic erythema and all itching dermatoses, also nervous disorders, allergy, sympathicotonia, neurasthenia."

The Council office directed a letter to the firm asking for information on Coli Metabolin so inquiring physicians might receive as much information as was available. The letter was referred to Dr. Cvan and Brown, consulting chemists in Brooklyn, whose reply contained little information that could not be gathered from the advertising material for Coli Metabolin except for the pertinent statement "We have advised the firm of the advantages of submitting the product to the Council, and have been told that inasmuch as it is in the process of a patent application, they cannot do so at the present time and not invalidate their patent rights through disclosure."

In considering a product for inclusion in New and Nonofficial Remedies, the Council requires a fully informative statement of composition so that the physician may know what he is prescribing. The Council also insists that the claims of manufacturers or agents concerning the therapeutic properties of their products must be compatible with demonstrable facts. For clinical evidence to be acceptable, it must offer sufficient objective data to enable the Council to confirm the facts and establish the scientific value of the conclusions drawn. The acceptance of evidence is determined mainly by its quality, and the evidence furnished must be in sufficient detail to permit judgment as to the care with which it was gathered and the validity of the deductions.

Obviously, present evidence indicates that Coli Metabolin (Tosse) is incompatible with the rules of the Council. Its composition may be said to be indefinite. Although the firm claims that the preparation has the same effect even when it is "deproteinized by heating," no indisputable evidence appears in its literature to support this statement.

The Council voted to declare Coli Metabolin (Tosse) unacceptable for inclusion in New and Nonofficial Remedies because (1) its composition is indefinite and semisecret, (2) the claims made are not supported by valid scientific evidence known to the Council or generally available.

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SATURDAY, FEBRUARY 7, 1942

CLIMACTERIC IN AGING MEN

Recently many reports have appeared in medical journals claiming that a climacteric occurs in middle aged men.¹ Brochures circulated by pharmaceutical manufacturers depict the woful course of aging man. None too subtly these brochures recommend that male hormone substance, like a veritable elixir of youth, may prevent or compensate for the otherwise inevitable decline. What of the postulated occurrence of a climacteric in men? The facts allow a reasonable analysis.

Female mammals below primates do not pass through a menopause, since they do not menstruate. A thorough study has not been made of subhuman primates. In old female rodents the reproductive status is unlike that in elderly women, for the decline of ovarian function is gradual and a return of reproductive function can be induced on stimulation by exogenous gonadotropic substances.² Indeed in aged mice and rats, as contrasted with women after the menopause, the ovaries contain ova after reproductive cycles disappear, and the degree of ovarian atrophy is much less severe.³ This dissimilarity between the rodent and the primate recalls a similar difference in the amount of retrogressive changes in the testes after hypophysectomy or cryptorchism, the primate (monkey) showing a much less degree of spermatogenesis than the rat.⁴

Available data allow examination of the essential nature of the menopause only as it occurs in women.

The primary phenomenon is ovarian failure, the ovary becoming atrophic and containing only a reduced number of ova.⁵ In late years ova disappear entirely. Decreased ovarian function, whether in the menopause or after bilateral ovariectomy, is followed by diminished secretion of estrogens and by an increase in the quantity of gonadotropins as measured in the urine.⁶ Elevated titers of urinary gonadotropins are observed continuously into old age⁷ and apparently are the result of hypersecretion by the pituitary.

Although the injection of exogenous gonadotropins has been claimed to reactivate the ovaries,⁸ this has been denied.⁹ Probably the ovaries of older women are at least less responsive than those of younger women.⁹ This insensitivity to gonadotropins observed in older women recalls a similar phenomenon in immature animals.¹⁰

Vascular and psychoneurologic complications are common, the former occurring in two thirds of menopausal women.¹¹ Other complications that occur frequently are headache, giddiness and "rheumatic" pains.¹¹ The nature of vascular phenomena at the menopause has been examined recently by Reynolds and his co-workers¹² and by Scherf.¹³

If men pass through a comparable climacteric state there should be evident (1) testicular insufficiency with (2) a pronounced compensatory hyperexcretion of gonadotropins and (3) the occurrence of vasomotor and other phenomena similar to those seen in menopausal women. However, evidence of an abrupt, spontaneously occurring climacteric in normal men has not been produced. The data accumulating from many reports have not indicated an abrupt decrease in the excretion of urinary androgens by normal men prior to senility, even though somewhat smaller quantities are excreted in the later years.¹⁴ Dingemans, Bor-

5 Allen, Edgar: Female Reproductive System, chapter 14 in *Problems of Aging*, edited by E. V. Cowdry, Baltimore, Williams & Wilkins Company, 1939. Kurzrok and Smith.⁹

6 Fluhmann, C. F.: Interrelationship of Anterior Hypophysis and Ovaries: Review of Recent Literature, *Am. J. Obst. & Gynec.* **18**: 738 (Nov.) 1929, Anterior Pituitary Hormone in the Blood of Women with Ovarian Deficiency, *J. A. M. A.* **93**: 672 (Aug. 31) 1929, Zenck, Bernhard: Ueber die Hormone des Hypophysenvorderlappens, *Klin. Wchnschr.* **9**: 393 (March 1) 1930.

7 Osterreicher, Walther: Vermehrte Ausscheidung von Hypophysenvorderlappenhormon (Prolan) im Harn in der Involutionperiode bzw. im Senium, *Klin. Wchnschr.* **11**: 813 (May 7) 1933. Hamburger.⁷

8 Westman, Axel: Rectifizierung von senilen menschlichen Ovarien, *Zentralbl. f. Gynäk.* **58**: 1090 (May 12) 1934.

9 Kurzrok, Raphael, and Smith, P. F.: The Menopause, in *The Pituitary Gland*, Baltimore, William Wood & Co., 1938, p. 340.

10 Engle, E. T.: The Relation of the Anterior Pituitary Gland to Problems of Puberty and of Menstruation, in *The Pituitary Gland*, Baltimore, William Wood & Co., 1938, p. 298.

11 An Investigation of the Menopause in One Thousand Women: Committee Report, *Lancet* **1**: 106 (Jan. 14) 1933.

12 Reynolds, S. R. N.; Kamreter, Sanford, Foster, Frances J., and Schloss, Stewart: Psychogenic and Somatogenic Factors in the Flashes of the Surgical Menopause, *Am. J. Obst. & Gynec.* **11**: 1012 (June) 1941, Dermalvascular Effects of Estrogen in Women with Menopausal Flashes, *Surg., Gynec. & Obst.* **73**: 296 (Aug.) 1941.

13 Scherf, David: Respiratory and Circulatory System in Females with Ovarian Dysfunction, *Ann. Int. Med.* **13**: 1414 (Feb.) 1940.

14 Funk, Casimir, Harter, B., and Leyba, A.: The Male Hormone II, *Proc. Soc. Exper. Biol. & Med.* **26**: 559 (April) 1929, Funk, C. D.: Excretion of Male Hormones. I, *Endocrinology* **21**: 61 (Jan.) 1937.

1 Larrar, C. P.: Clinical Endocrinology of the Male with Especial Reference to the Male Climacteric, *J. Florida M. A.* **26**: 398 (Feb.) 1940. Dunn, C. W.: Male Hormone Therapy of the Male Climacteric and the Gonadal Insufficiency State, *Delaware M. J.* **11**: 76 (May) 1939. Werner, A. A.: The Male Climacteric, *J. A. M. A.* **112**: 1441 (April 15) 1939. Donald, H. R.: Observations on the Male Climacteric, *Clin. J.* **67**: 323 (Aug.) 1938. Galloway, David: The Male Climacteric, *Malvern M. J.* **8**: 129 (Sept.) 1933. Douglas.¹¹

2 Zondek, Bernhard and Aschheim, Selmar: Hypophysenvorderlappen und Ovarium, *Arch. f. Gynäk.* **130**: 1, 1927. Steinach, L., Kun H., and Hohlweg, W.: Reactivierung der senilen Ovarien und des weiblichen Gesamtorganismus auf hormonellen Wege, *Arch. f. d. ges. Physiol.* **219**: 323, 1928.

3 Waldever, L.: Zur Frage der Reactivierung von senilen menschlichen Ovarien, *Zentralbl. f. Gynäk.* **58**: 2882 (Dec. 8) 1934.

4 Smith, P. E.: Comparative Effects of Hypophysectomy and Therapy on the Testes of Monkeys and Rats, in *Les hormones sexuelles*, edited by L. Pincus, **3**: 271, 1938.

chardt and Laquer¹⁵ report an average excretion per liter of 19 international units in men 59 to 67 years of age in contrast with the 40 to 50 international units per liter in men 20 to 34 years of age. Fraser and his co-workers¹⁶ found values with colorimetric assay to be 1.8 to 4.8 mg. in men 71 to 75 years of age, a sharp contrast to the average of 13.8 mg. in young male adults. Dingemans and her collaborators report, however, the excretion of 35 and 50 international units by two men 80 years of age, which emphasizes the point that no sudden gonadal dysfunction comparable to that in women is known to occur at any set age range.

The continued excretion of androgens cannot be explained by substitution of secretions from the adrenal or other sources, for on removal of the testes the quantities of urinary androgen rapidly diminish.¹⁷

Neither is there known to be any sudden or material elevation in the quantities of urinary gonadotropins excreted by aging men such as in women after the menopause.¹⁸ This fact is relevant to an understanding of testicular secretion in older men. Although hypersecretion of gonadotropins occurs in actual instances of primary testicular insufficiency, the excretion of urinary gonadotropins apparently does not rise in aging men as might be expected as a result of claimed decrease in testicular secretion. The inference might be drawn that the production of gonadotropins by the pituitary becomes less in some men during later years. If so, the reduced testicular function would be secondary.

The occurrence of vasomotor phenomena comparable to those in menopausal women are apparently infrequent despite claims that men in the fourth and fifth decades exhibit such vascular changes along with a number of specific and nonspecific complaints.¹⁹

Primary testicular insufficiency results in a climacteric-like state. In men, as in women, a "climacteric

state" obtains when there is a primary gonadal insufficiency with decrease in gonadal secretions and increase in the quantities of urinary gonadotropins.²⁰ The titers of urinary gonadotropins are comparable to those in menopausal women and, in some castrate men, are in the higher portion of the range found in ovariectomized women.²¹ Two of three men castrated prepuberally and now in their sixth decade have been observed each to excrete 160 mouse units.²² Apparently hyperproduction of gonadotropins has continued for the almost half century these men have lived since castration. A climacteric state does not occur, however, either in women²³ or in men²² when the gonadal insufficiency is secondary to hypofunction of the pituitary.

In the castrate man vasomotor phenomena are severe in many instances and appear with the intensity seen in ovariectomized women. In some castrates palpitation, dyspnea on effort and other phenomena observed in certain menopausal women occur.¹³ Charts show the frequency of hot flushes and sweating in a castrate man and their temporary control during treatment with testosterone propionate. This significance of psychogenic factors is suggested by the lessened effectiveness of endocrine therapy during periods when the patients are especially apprehensive and disturbed.

Although the prerequisite for a climacteric-like state in men, namely a primary testicular insufficiency with evidence of a compensatory hypersecretion of gonadotropins, is seldom fulfilled spontaneously, a few instances might be observed, such perhaps as those reported by Heller and his associates²⁴ as "involutional" cases (age not stated) in which large quantities of urinary gonadotropins were excreted. Possibly bilaterally cryptorchid men might exhibit climacteric-like phenomena, for experimentation in several species of animals shows that long-continued cryptorchism results in the secretion of subnormal amounts of male hormone substance. Hess, Kunstadter and Saphir²⁵ have stated that urinary gonadotropins are present in supranormal quantities in bilaterally cryptorchid boys.

Cases of primary testicular insufficiency are observed only infrequently as in severe orchitis, traumatic castration and surgical castration, as for medicolegal purposes or incidental to management of such matters as hernias, hydroceles and tumors.

15. Dingemans, Elizabeth; Borchardt, Helene, and Laquer, Ernst: Capon Comb Growth Promoting Substances ("Male Hormones") in Human Urine of Males and Females of Varying Ages, *Biochem. J.* **31**: 500 (April) 1937.

16. Fraser, R. W.; Forbes, Anne P.; Albright, Fuller; Sulkowitch, Hirsch, and Reifstein, E. C., Jr.: Colorimetric Assay of 17-Ketosteroids in Urine: A Survey of the Use of This Test in Endocrine Investigation, Diagnosis and therapy, *J. Clin. Endocrinol.* **1**: 234 (March) 1941.

17. Kenyon, A. T.; Gallagher, T. F.; Peterson, D. H.; Dorfman, R. I., and Koch, F. C.: The Urinary Excretion of Androgenic and Estrogenic Substances in Certain Endocrine States: Studies in Hypogonadism, Gynecomastia and Virilism, *J. Clin. Investigation* **16**: 705 (Sept.) 1937. Kenyon, A. T.; Sandiford, Irene; Bryan, A. H.; Knowlton, Kathryn, and Koch, F. C.: The Effect of Testosterone Propionate on Nitrogen, Electrolyte, Water and Energy Metabolism in Eunuchoidism, *Endocrinology* **23**: 135 (Aug.) 1938. Kenyon, A. T.; Knowlton, Kathryn; Sandiford, Irene; Koch, F. C., and Lotwin, Gertrude: A Comparative Study of the Metabolic Effects of Testosterone Propionate in Normal Men and Women and in Eunuchoidism, *ibid.* **26**: 26 (Jan.) 1940. Callow, N. H.; Callow, R. K., and Emmens, C. W.: 17-Ketosteroid, Androgen and Estrogen Excretion in the Urine of Cases of Gonadal or Adrenal Cortical Deficiency, *J. Endocrinol.* **2**: 88 (May) 1940. McCullagh, E. P.: Treatment of Testicular Deficiency with Testosterone Propionate, *J. A. M. A.* **112**: 1037 (March 18) 1939. The subject is reviewed by Hamilton, Dorfman and Hubert in an article to be published.

18. Saethre, Naakon: Quantitative Bestimmungen der Ausscheidung von Prolan bei Geschlechtsreifen und bei greisen Männern, *Klin. Wchenschr.* **14**: 376 (March 16) 1935. Heller, Heller and Severinghaus.²⁴ Hamilton and Catchpole.²¹

19. Douglas, R. J.: The Male Climacteric: Its Diagnosis and Treatment, *J. Urol.* **45**: 404 (March) 1941.

20. Hamburger, Christian: Studies on Gonadotropic Hormones from Hypophysis and Chorionic Tissue with Special Reference to Their Differences, *Acta path. et microbial. Scandinav.*, supp. 17, p. 1, 1933. Catchpole, Hamilton and Hubert.²¹

21. Catchpole, H. R.; Hamilton, J. B., and Hubert, G.: Unpublished data.

22. Hamilton, J. B., and Catchpole, H. R.: Unpublished data.

23. Albright, Fuller: Studies on Ovarian Dysfunction: III. The Menopause, *Endocrinology* **20**: 24 (Jan.) 1936.

24. Heller, Emily J.; Heller, Carl G., and Severinghaus, Elmer L.: Gonadotropic Hormone: Assays of Human Male Urine, *Endocrinology* **20**: 1 (July) 1941.

25. Hess, J. H.; Kunstadter, R. H., and Saphir, William: Urinary Excretion of Gonadotropic Hormone in Cryptorchism, *J. A. M. A.* **108**: 352 (Jan. 30) 1937.

Androgens exert a tonic and stimulating action, associated perhaps with their metabolic effects.²⁶ Male hormones provide replacement therapy in castrates but are active also in normal middle aged men beset by aging processes which are in some large proportion irrespective of testicular function. Androgens may influence quite harmfully the physiologic and psychologic condition of previously well adjusted elderly men, as has been observed incidental to the trial use of male hormone substances in the treatment of benign hypertrophy of the prostate. Actual evaluation of androgenic treatment cannot be avoided by glib explanation that men normally undergo a spontaneous climacteric, an abruptly occurring state of primary testicular insufficiency in which male hormones act as substitutional therapy. Primary gonadal insufficiency in men induces "climacteric phenomena" quite comparable to those in menopausal women. In normal men, however, a sudden, spontaneous onset of primary testicular insufficiency is observed only infrequently, lacking any evidence of rapid decrease in the production of gonadal hormones and compensatory increase in urinary gonadotropic substances, such as are characteristic of the menopause.

EPIDEMIC VIRUS CONJUNCTIVITIS

During the summer of 1941, according to Holmes,¹ a rapidly spreading type of acute conjunctivitis raged in Oahu, Hawaii. At first, patients and doctors called it "pink eye." However, when repeated cultures and smears were made from conjunctival scrapings and secretions from more than 50 cases, investigators found it impossible to determine any offending organism. In October a considerable number of cases began to appear in California, and the peak of the outbreak was reached in December. At that time authorities noted that 2 per cent of workers in some ship building plants were affected, but the percentage of those affected was higher in special groups, such as welders, whose eyes are notoriously subjected to the trauma of light.

After an incubation period of from two to five days the patients experience pain, excessive lacrimation and the feeling that some granular dusty body or some other foreign substance is in the eye. There is extensive edema, but a purulent discharge is seldom seen. The upper lids are usually reddened and swollen, and blepharospasm is encountered. In many instances ophthalmologists report that the palpebral conjunctivas are intensely reddened, edematous and congested; some have noted also that the bulbar conjunctivas are similarly affected. In Hawaii a characteristic and almost

pathognomonic observation was the appearance of multiple subconjunctival hemorrhages on the tarsal portions of the conjunctivas.

In most instances the disease seemed to be self limited. It pursues a leisurely clinical course, in the absence of complications, lasting from two to three weeks. When corneal infiltrates developed, the eyes remained irritated for from four to six weeks or longer. Among the complications were infiltrates of the cornea, which appeared as grayish dots. With the aid of the slit lamp, minute deposits were seen forming a faint haze on the basal layers of the corneal epithelium. In some instances, when secondary infections occurred there was hemorrhagic conjunctivitis, and in a few cases there were ulcers of the cornea.

Thus far attempts to determine the cause of this conjunctivitis have been unavailing, but practically all the observers believe that a specific virus is responsible. In California the health department reports that inoculation of the scrapings into mice, guinea pigs, rabbits and monkeys gave negative results. Also attempts to make aerobic and anaerobic cultures yielded nothing. Studies are being continued in several laboratories with a view to isolating a virus or developing more information concerning the nature of the infection.

As is usual, the person who became infected was inclined to claim as the cause the last activity in which he engaged. The worker at an emery wheel was certain that a piece of the wheel struck his eye, the worker in the pineapple canneries stated that pineapple juice in the eye was responsible, swimmers said that the infection was due to swimming in contaminated water, and welders felt that the disease was directly due to the welding process.

The prevention of this, as of other infections concerning the eye, is definitely related to the prevention of contamination by soiled hands and linens. In industrial plants, medical control of the industrial worker is necessary.

The condition as it occurred in California seemed to be much less virulent and to have a lower grade transmission rate than that in Hawaii. Thus far all methods of specific treatment have been unavailing. Physicians in Hawaii and in California tried the mild silver preparations, various arsenic preparations, zinc, silver nitrate and alum with the observation that some of these methods of treatment seemed to aggravate the condition rather than to produce benefit. Most comforting was the application of cold compresses. Incidentally, the application of infra-red and other rays, both generally and locally, and the use of sulfonamide derivatives were also unavailing. The complications affecting the eye were treated by the usual technic of dilation and the use of iodine preparations for hastening the absorption of corneal infiltrates.

26. Thorn, G. W., and Harrop, G. A.: The "Sodium Retaining Effect" of the Sex Hormones, *Science* 86: 40 (July 9) 1937. McCullagh, E. P., and Rossmiller, H. R.: Methyl Testosterone, *J. Clin. Endocrinol.* 1: 503 (June) 1941. Kenyon and others,¹⁷ 1938 and 1940.
1. Holmes, W. John: Epidemic Infections Conjunctivitis, *Hawaii M. J.* 1: 11 (Nov.) 1941.

Current Comment

NEW INSECT VECTORS FOR BUBONIC PLAGUE

Isolation of virulent plague bacilli from avian fleas has been reported by Wheeler, Douglas and Evans¹ of the Hooper Foundation, San Francisco. Thirty years ago Rucker² suggested that predatory birds may play a role in the spread of bubonic plague. The suggestion, however, was not supported by experimental evidence. Within the last few years, confirmatory evidence has been reported by Jellison,³ who demonstrated that rodent fleas are frequently transported by predatory birds to their nests on freshly killed rodents. From none of the transported fleas, however, was he able to recover the plague bacillus. An opportunity to test the Rucker theory was afforded by a recent local outbreak of plague among the ground squirrels in central California. Two months after the peak of the epizootic a burrowing owl was captured about 5 miles outside the infected area. This owl was the carrier of numerous "sticktight" fleas, an avian species (*Echidnophaga gallinacea*), found abundantly on hawks, owls, chickens and other domestic fowls and often present on rodents and coyotes. A mass inoculation of these avian fleas into a guinea pig proved that they were the carriers of virulent plague bacilli. This is apparently the first definite proof of avian transmission of plague infected insects. As far as known the birds themselves are not susceptible to the plague bacillus. The association of burrowing owls with colonies of ground squirrels, however, is epidemiologically interesting.

PREMATURE ENTHUSIASM ABOUT COLI METABOLIN (TOSSE)

Elsewhere in *THE JOURNAL*¹ appears a report by the Council on Pharmacy and Chemistry on a preparation known as Coli Metabolin (Tosse), which is advocated for the treatment of hay fever and allergic asthma. This preparation has been the subject of numerous inquiries received at the headquarters of the American Medical Association. The majority of the inquiries appear to have arisen as a result of articles in lay publications based on a short communication by Dr. Ernest J. Elsbach published in the *New York State Journal of Medicine*. From the Council report it may be inferred that critical investigators will consider the Elsbach article premature and unscientific, since little evidence is presented to justify the enthusiastic attitude of the author. According to the Council, the composition and exact mode of action of Coli Metabolin (Tosse) are indefinite and the claims of the firm are not supported by available valid scientific evidence. Thus, Coli Metabolin (Tosse) has been declared unacceptable for inclusion in New and Nonofficial Remedies. In order to be eligible for interstate commerce, biologic

products and certain other therapeutic agents such as the arsphenamines must be licensed following consideration by the Division of Biologics Control of the National Institute of Health of the U. S. Public Health Service. The latter agency had refused to grant a license to the Tosse Laboratories permitting shipment of Coli Metabolin in interstate commerce. Nevertheless the product received some distribution, presumably under the pretext that it was intended for "investigational use only." It is entirely proper that laws regulating the movement of drugs in interstate commerce should provide exceptions for articles intended for legitimate research. Nevertheless, such exceptions are obviously open to serious abuse. The federal authorities have the particularly grave responsibility of making certain that the public is protected from those who choose this loophole as an outlet for drugs that have not established that right to a place on the American market. Any one with knowledge of the commercial distribution of such drugs will do well to inform the proper legal authorities.

THE PIGMENT OF THE MALARIA PARASITE

As the malaria parasite develops inside the red blood cells, the hemoglobin content of the cells diminishes and a dark colored pigment accumulates within the cells. Carbone,¹ Ascoli² and Brown³ identified this pigment spectroscopically as hematin. However, their methods of extraction did not preclude the possibility that the hematin had been liberated from some preexisting complex. Fairley and Bromfield⁴ described a pigment in the plasma of a patient with blackwater fever which spectroscopically appeared similar to methemoglobin. Further study of the pigment, however, suggested that it was a compound of hematin and plasma albumin to which Fairley gave the name "methemalbumin." In view of this diverse opinion a reinvestigation of the chemical identity of the malaria pigment was undertaken by Morrison and Anderson,⁵ who obtained their parasite material from the blood of monkeys infected with *Plasmodium knowlesi*. In some animals these authors found as much as 75 per cent of the total erythrocytes containing malaria parasites in terminal infection. They dissolved the pigment from the parasite mass with sodium carbonate solution and then demonstrated the identity of its spectrophotometric curve with that of a solution of recrystallized hemin in 0.5 normal sodium carbonate. Morrison and Anderson thus confirmed the observation by Sinton and Ghosh⁶ that 0.5 normal sodium carbonate does not alter hemoglobin within the time required to dissolve the pigment from the parasite. The pigment itself, they proved, is identifiable spectrophotometrically as hematin (ferrihemic acid). The study is being continued to determine, if possible, the role of the pigment in the malaria syndrome.

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2. Ascoli, V.: *Abst. München. med. Wehnschr.* 57: 2315, 1910.

3. Brown, W. H.: *J. Exper. Med.* 13: 290, 1911.

4. Fairley, N. H., and Bromfield, R. J.: *Tr. Roy. Soc. Trop. Med. and Hyg.* 28: 307 (Aug.) 1934.

5. Morrison, Dempie B., and Anderson, William A. D.: *The Pigment of the Malaria Parasite*, *Pub. Health Rep.* 57: 90 (Jan. 16) 1942.

6. Sinton, J. A., and Ghosh, B. N.: *Records Malaria Survey India* 4: 205, 1934.

1. Wheeler, C. M.; Douglas, J. R., and Evans, F. C.: *Science* 94: 560 (Dec. 12) 1941.

2. Rucker, W. C.: *Pub. Health Rep.* 24: 1225, 1909.

3. Jellison, W. L.: *Pub. Health Rep.* 54: 792 (May 12) 1939.

1. Coli Metabolin (Tosse) Not Acceptable for N. N. R., this issue, p. 456.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT OF OFFICERS FOR MEDICAL DEPARTMENT, ARMY OF THE UNITED STATES

The following memorandum was sent by the Adjutant General's Office to all corps area and department commanders on January 21:

1. Letter from this office dated Feb. 3, 1941, file AG 381 (8-13-40) R-A, Subject: "Assistance of the American Medical Association in the classification and procurement of physicians for the military service," is rescinded.

2. There has been established under the Office for Emergency Management, Office of Defense Health and Welfare Services, a Procurement and Assignment Service to coordinate the procurement of physicians, dentists and veterinarians for all governmental, industrial and civilian requirements.

3. In order to expedite appointments in the Medical Corps, Dental Corps and Veterinary Corps, Army of the United States, the following procedure will govern the processing of all applications:

(a) All individual inquiries for information concerning a commission or offers to serve as a medical, dental or veterinary officer should be acknowledged by the headquarters receiving the communication and the communication itself forwarded by indorsement to the Executive Officer, Procurement and Assignment Service, Office of Defense Health and Welfare Services, Social Security Building, Washington, D. C.

(b) The Procurement and Assignment Service will supply to individual applicants who are eligible and qualified for appointment, the required forms (WD AGO Form No. 170, "Application for Appointment and Statement of Preferences for Reserve Officers," in duplicate, and WD AGO Form No. 178 and 178-2, both in duplicate) together with a request on the surgeon of the nearest army post for a final type physical examination. Each request for final type physical examination authorized by the Procurement and Assignment Service will be honored by surgeons of army posts. Application forms and supporting papers, except the report of physical examination, will be returned by the applicant to the Procurement and Assignment Service; the report of physical examination (WD AGO Form No. 63), will be forwarded by the surgeon of the

station at which the examination was conducted, direct to the Surgeon General.

(c) The completed applications and supporting papers, except report of physical examination, will be transmitted by the Procurement and Assignment Service to the Surgeon General together with a statement by that service derived from its files and regarding eligibility of the applicant for appointment in the Medical, Dental and Veterinary Corps, Army of the United States, as prescribed by current Army Regulations. The Procurement and Assignment Service will also furnish the Surgeon General with the professional classification and evaluation of the applicant as determined from the recent nationwide survey made by the Committee on Medical Preparedness of the American Medical Association.

(d) The Surgeon General will forward such completed applications to the Adjutant General as prescribed in paragraph 10 (4), Army Regulations No. 605-10, and inform the Procurement and Assignment Service of the action recommended.

4. No change in the present procedure for the appointment of graduates of medical units of the Reserve Officers' Training Corps in the Medical Corps Reserve; nor for appointment in the Army of the United States of physicians and dentists for affiliated units; of junior and senior students in medical schools in the Medical Administrative Corps, Army of the United States; nor of graduates of such schools who are to be appointed in the Medical Corps, Army of the United States, on graduation.

5. When the applications for appointment have been approved, the Adjutant General will notify the applicant direct of his appointment with instructions as to proper completion of oath of office and finger print card and the return of such forms direct to the Adjutant General. When the oath of office has been received by the Adjutant General, the Surgeon General and the Executive Officer, Procurement and Assignment Service of the Office of Defense Health and Welfare Services, Office for Emergency Management, Washington, D. C., will be notified.

By order of the Secretary of War.

OCCUPATIONAL DEFERMENTS OF PHYSICIANS, DENTISTS AND DOCTORS OF VETERINARY MEDICINE

The following memorandum was released to all state directors of the Selective Service System on January 28:

Information previously distributed by this headquarters clearly indicates an overall shortage of physicians, dentists and doctors of veterinary medicine in the nation. Since war was declared, the shortage of these professional men has become acute. It is now manifest that every qualified doctor, dentist and veterinarian must serve where he can render the greatest professional service to the nation.

In order to accomplish this purpose, the President, by executive order, has formed the Procurement and Assignment Service, under the Office of Defense Health and Welfare Services. This service was formed primarily for the purpose of gathering

and making available information with respect to the supply of qualified practitioners in the fields of medicine, dentistry and veterinary medicine, with a view of securing the most effective allocation of medical manpower as indicated by the requirements of the armed forces, civilian needs and industrial medicine.

To work with the headquarters of this service in Washington, there is being organized a committee for each corps area in the continental United States. Each committee will consist of five doctors, two dentists and one veterinarian. The committees have been accepted as advisers to the nine corps area surgeons, to the naval district surgeons and to the regional medical officers of the Office of Civilian Defense and will operate not only through the subdivisions of the medical, dental and veterinary

associations but also with the profession at large in securing information and giving advice.

When considering the classification of any registrant who is a qualified physician, dentist or doctor of veterinary medicine, the director of Selective Service desires that local boards, through the state director, shall consult the procurement and assignment committee of the corps area for information as to the availability of qualified physicians, dentists and doctors of veterinary medicine in the community. This information shall be considered by the local board in determining the registrant's classification. The executive order referred to in no way affects the authority of the Selective Service System to classify registrants. The procedure has been established for the purpose of making such information available to local boards.

THE ARMY CENTRAL EPIDEMIC CONTROL BOARD

As announced by the Secretary of War in January 1941, a Central Epidemic Control Board, composed of physicians from civil life, has been established to function as an adviser to the Surgeon General of the Army, Major General James C. Magee. Since establishment of this Central Control Board rates for respiratory disease in the Army have been unusually low, although measles and influenza, particularly measles, this winter are registering an incidence among the civil population in certain areas greater than the five year average for the country. The low rate is due in part to the fact that the troops are seasoned and thus better able to resist disease. The seven members of the Central Control Board are Dr. Francis G. Blake, president of the board, professor of medicine and dean of the Yale University School of Medicine; Dr. O. H. Perry Pepper, professor of medicine, University of Pennsylvania School of Medicine; Dr. Alphonse R. Dochez, professor of medicine, Columbia University College of Physicians and Surgeons; Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine; Dr. Kenneth F. Maxcy, professor of epidemiology, School of Hygiene and Public Health, Johns Hopkins University; Dr. Andrew J. Warren, assistant director, International Health Division, Rockefeller Foundation, and Dr. Oswald T. Avery, member of the Rockefeller Institute for Medical Research.

The consultants appointed to advise this Central Board are Dr. Wilbur Sawyer, director of the International Division, Rockefeller Foundation, and Dr. E. S. Robinson, director of the Division of Biological Laboratories of the Massachusetts Department of Health.

Operating under the Central Control Board are eight investigating commissions, each of which has a number of consultants and teams.

Heading the Commission on Influenza is Dr. Thomas Francis Jr., professor and chairman of the Department of Epidemiology of the School of Public Health, University of Michigan. This group is carrying on intensive studies on influenza vaccines in cooperation with the Rockefeller Foundation. It is also making a study of the efficiency of various types of respiratory masks and laboratory studies of specimens collected in the field bearing on the cause of, transmission of and bodily resistance to influenza and its complications. The group is also investigating possible methods of inducing immunity other than by vaccination. The influenza commission is organized into three teams: an eastern team with headquarters in New York, a midwestern team with headquarters at the University of Michigan and a far western team with headquarters in the California State Department of Health, Berkeley, Calif. Should there be an influenza epidemic, the commission will undertake research looking to the nature of the virus involved and will study the effectiveness of the sulfonamide derivatives in the prevention of complications due to bacteriologic invasion following reduction of bodily resistance by the virus.

The Commission on Pneumonia is headed by Dr. Colin M. MacLeod, professor of bacteriology in the New York University College of Medicine. This commission deals with every type of pneumonia and is carrying on studies dealing with the classification of the pneumonia organism. Experiments are

For the convenience of the state director and the local boards, the names and addresses of the chairmen of the nine corps area committees of the Procurement and Assignment Service are listed:

First Corps Area—Dr. W. G. Phippen, Salem, Mass.
Second Corps Area—Dr. A. W. Booth, Elmira, N. Y.
Third Corps Area—Dr. A. M. Shipley, Baltimore.
Fourth Corps Area—Dr. Edgar Greene, Atlanta, Ga.
Fifth Corps Area—Dr. E. L. Henderson, Louisville, Ky.
Sixth Corps Area—Dr. Charles H. Phifer, Chicago.
Seventh Corps Area—Dr. Roy W. Fouts, Omaha.
Eighth Corps Area—Dr. Sam E. Thompson, Kerrville, Texas.
Ninth Corps Area—Dr. Charles A. Dukes, Oakland, Calif.

LEWIS B. HERSHEY, Director.

being conducted in methods of immunization employing civilian volunteers and in the use of chemical agents in the management of empyema. In event of epidemics of pneumonia in the Army, this commission will conduct examinations in the field to determine the nature of the infecting agent and to make such other studies as may be necessary for the development of effective control measures. Such field investigations may be made independently or in collaboration with the commissions on influenza, measles and hemolytic streptococcus infections. Following a preliminary inquiry of cases of atypical pneumonia at an army camp, a team composed of Dr. John H. Dingle of Harvard University, Dr. Berry Wood of Johns Hopkins University and Dr. Gerritt J. Budding of Vanderbilt University was sent to make a study of this disease.

The Commission on Hemolytic Streptococcus Diseases is headed by Dr. Martin H. Dawson of the Columbia University College of Physicians and Surgeons. This group arranges also for the manufacture and purchase of diagnostic streptococcus typing serums and the establishment of central group and typing laboratories and assists in collaboration with other commissions and with the Army Medical School in the grouping and typing of streptococcus strains. Attention is being given to the determination of the effect of the sulfonamide derivatives in the carrier state of the hemolytic streptococcus. The commission is now undertaking a special field investigation in the fifth and sixth corps areas in order to complete a preepidemic survey of the types of infectious organisms present and their relationship to scarlet fever and acute rheumatic fever. This work is being directed by Dr. Francis F. Schwenker of the International Health Division of the Rockefeller Foundation.

Dr. Joseph Stokes Jr., professor of pediatrics at the University of Pennsylvania School of Medicine, heads the Commission on Measles, which deals with tests to detect the susceptibility to infection of individuals and undertakes to determine the possibility of inducing active immunity by the use of certain protein fractions of the blood. The group has also been charged with the additional duty of undertaking pertinent studies in mumps, with special emphasis on means of reducing the incidence of orchitis. Field investigation deals particularly with the effect of sulfonamide derivatives on the incidence and control of the bacteriologic complications of measles.

Dr. Perrin H. Long, professor of preventive medicine of the Johns Hopkins University School of Medicine, Baltimore, heads the Commission on Meningococcic Meningitis. This commission has established a central laboratory at the Johns Hopkins University to receive and type strains of meningococci, to standardize typing serums and to maintain and analyze therapeutic records on meningococcic meningitis in the Army. The commission is conducting studies dealing with the classification of the disease producing agent, the various serums used for diagnostic purposes and the curative effect of the sulfonamide derivatives. In event of a threatened epidemic of meningococcic meningitis in the Army, this commission will be called on to aid in developing control measures, to conduct bacteriologic investigation concerning the prevalence of types of meningococci and to study the epidemic aspects of the outbreaks and the effects of chemotherapeutic agents on the incidence and duration of the carrier state.

Dr John R Paul, associate professor of medicine of the Yale University School of Medicine heads the Commission on Neurotropic Virus Diseases. New fields for research have been opened up with the development of new laboratory procedures for the diagnosis and differentiation of neurotropic virus disease and a special virus laboratory was set up at the Army Medical School in October 1941. This laboratory is collaborating with the commission in serologic and immunologic studies. The chief object of field studies to be undertaken will be the development of control measures and search for the presence of the virus in materials from patients. Particular attention is being given to the possible relationship by the sleeping sickness of horses and that of man. A vaccine which affords protection to horses leads to the hope that similar protection may be conferred on man—an important question which will be investigated.

Dr Stanhope Bayne-Jones, professor of bacteriology at the Yale University School of Medicine, heads the Commission on Epidemiological Survey. The duty of this commission is essentially that of counterespionage—a detector command which will keep constant check on organisms producing disease in man. This commission conducts periodic surveys throughout the year in different geographic areas of the country to determine the presence of disease germs in the upper respiratory tract of selected groups of soldiers. The purpose of these surveys is to furnish a base line of the “normal” incidence of respiratory pathogens and to watch for significant changes in respiratory flora which might indicate the imminence of epidemics of respiratory diseases. Such a study of military personnel in camps in the first corps area is now being made by a team composed of Dr J Howard Mueller, Dr John F Enders and Dr George Hartley Jr, all of Harvard University. Another investigation of “San Joaquin Valley fever” in personnel stationed at certain aviation training centers in California, is being carried on by the commission under the supervision of Dr Charles E Smith of Stanford University.

Dr Oswald H Robertson of the Department of Medicine, University of Chicago Medical School, heads the Commission on Cross Infections in Hospitals. This commission conducts long term studies on methods for reducing the existence of cross infection in hospital wards with special emphasis on the ultraviolet radiation and the development of effective chemical agents for the sterilization of air.

DEFERMENTS OF PROFESSIONAL STUDENTS AND INSTRUCTORS

The Selective Service System, Washington, D C, on January 12, issued the following supplement to Memoranda (I 62), (I 91) (I-99) and (I-150) Occupational Deferment of Engineering, Chemical, Physics, Medical, Dental Students and Instructors (III).

The attention of local boards is again invited to the necessity of seriously considering for deferment students in certain specialized professional fields in which dangerously low levels of manpower are found to exist. This memorandum is in addition to and does not rescind those previously issued which apply to students in other critical fields.

Subsequent to the declaration of war, local Selective Service agencies have in many instances proceeded to classify registrants without regard to the fact that they are in training or preparation for activities the maintenance of which is essential to the national health safety or interest and war production. This is particularly true in cases of engineering, chemical, physics, medical and dental students.

Admittedly there is an overlapping of the military and civilian requirements of a nation at war, however, it must be borne in mind that the one is dependent on the other. It is estimated that the expanding army will eventually require doctors and dentists in numbers heretofore unknown. They will not be available if those students who show reasonable promise of becoming doctors and dentists are inducted prior to becoming eligible for commissions.

War industries are undergoing a hitherto unknown expansion. Aeronautical, civil, electrical, chemical, mining metallurgical mechanical and radio engineers together with physicists and chemists are essential to insure a sufficient flow of material for

the armed forces, and industry must look to the engineering, chemical and physics students now in training to meet their present and future requirements.

It is equally important that instructors in these fields be seriously considered for occupational deferment. Shortages of qualified instructors are known to exist. The educational institution employing the instructor should be requested to file DSS Form 42A in all cases in which deferment is sought.

In considering student deferment cases, certain local boards are requiring the execution of DSS Form 42A in addition to the affidavit of the college or university contained in Bulletin No 10 issued by the American Council on Education. DSS Form 42A should not be required when the American Council on Education affidavit has been submitted.

Local boards will be informed when the manpower requirements necessary to the national health safety or interest and war production become static. Until such time, the policy set forth in the Memoranda to All State Directors I 62, I 91, I-99 and I-150 remains in force.

LEWIS B HERSHEY, Director

MAN POWER OF THE NATIONS AT WAR

On the basis of volume of man power of fighting age, the United States and its allies would have a two to one chance of victory according to an estimate of war age males in the belligerent countries made by the United States Bureau of the Census, Department of Commerce.

Allies—Males Aged 18-35 as of July 1, 1941
(Estimated)

United States	
Continental United States	19,914,000
The Philippines	2,400,000
Other U. S. territories and possessions	482,000
Total U. S. and possessions	22,796,000
Great Britain and Dominions	
United Kingdom	6,815,000
Australia	1,083,000
Canada	1,797,000
New Zealand (excluding Maoris)	238,000
Union of South Africa (white)	340,000
Total Great Britain and Dominions (excluding India)	10,273,000
(India had an estimated 58,244,000 males between 18 and 35 as of July 1, 1941 and if India should be included the total for Great Britain and its dominions would be)	
	68,517,000
Russia	
Russia (Europe and Asia)	21,574,000
China	
If it was possible to mobilize the full strength of China's 18-35 age group of males there would be added to the Allies' strength approximately	
Total Allies (18-35 males) not including India and China	49,000,000
China	56,643,000
Total Allies (18-35 males) including India and China	163,887,000
NOTE—Because of the incomplete census records respecting the natives of the Netherlands Indies the U. S. Census Bureau did not undertake to estimate its 18-35 male population. Its total male and female population of all ages is estimated at 69,435,000.	
Axis Nations—Males Aged 18-35	
Germany (including Austria and Sudetenland)	11,281,000
Italy	7,440,000
Japan (excluding Korea and Manchukuo)	10,839,000
Total Axis Nations	29,560,000

The Census Bureau compilation indicates that the principal belligerents by making fighters of all males between the ages of 18 and 35, would be able to place 85,203,000 men in the field not including China, India and the Netherlands Indies. Of the grand total, 56,643,000 would serve under allied flags and 28,560,000 under Axis flags.

If China and India were to be included the number of fighting males between 18 and 35 in the allied nations would aggregate 163,887,000.

The analysis of the Census Bureau was made from the latest censuses of all the nations involved with projections brought forward to July 1, 1941. The figures do not take into account casualties already suffered but these would not seriously disturb the ratio.

The estimates likewise do not include, on either side, the males of 18 to 35 in the occupied countries of France, Czechoslovakia, Denmark, Estonia, Greece, Latvia, Lithuania, Netherlands, Norway, Poland, Yugoslavia and French Indochina, whose total population, male and female of all ages, is 167,978,000.

CIVILIAN COOPERATION AT HONOLULU AND PEARL HARBOR

Hundreds of lives are reported to have been saved following the December 7 attack on Honolulu and Pearl Harbor through the use of the adequate supply of blood plasma and other blood substitutes made immediately available to the Army and Navy by the civilian defense group of Honolulu, which was part of a prearranged plan set up by the Army department surgeon Col. Edgar King, who had requested also the civilian medical group to organize surgical teams for army service. The head of the Civilian Plasma Bank of Honolulu was Dr. Forrest J. Pinkerton. Immediately after the bombing started, the wives of officers and enlisted men rushed to Hickam Field Hospital to aid the few nurses on duty at the time, where they did heroic work in the hospital kitchens and in making bandages and surgical dressings. The main army post kitchens having been blasted by bombs, the Hickam Field Hospital kitchens for a while fed fifteen hundred persons daily. This information was brought to light in a report to the Surgeon General of the Army by Dr. Perrin Long of Johns Hopkins University Medical School, Baltimore, and Dr. I. S. Ravdin of the University of Pennsylvania School of Medicine, Philadelphia. The report stressed the speedy transfer of the wounded to the U. S. Army Tripler General Hospital, the splendid cooperation of the civilian defense group, and the incalculable value of the sulfonamide treatment of wounds following the Japanese attack. They said: "We have been impressed again and again with the incalculable value of sulfonamide therapy in the care of many of the casualties," the report states. "We believe that it is highly important that physicians—both civilian and military—become familiar with the general and specific considerations which govern the use of oral and local use of the sulfonamides in the treatment of wounds and burns and that, so far as it is possible, routine methods for the use of sulfonamides in casualties be devised and adopted. . . .

"The Committee on Chemotherapy and the Committee on Wound Infection should receive information on the startling efficacy of sulfonamide therapy in the open wounds."

BASE HOSPITAL NO. 17 REORGANIZED

Base Hospital No. 17, which served during the first world war, comprising members of the staff of Harper Hospital, Detroit, is being reorganized for service in the present war under the command of Col. Henry R. Carstens, president of the Michigan State Medical Society. Dr. Louis J. Hirschman will be chief of the surgical service and Dr. E. D. Spalding chief of the medical service. These three medical officers served in the first world war. Other physicians already assigned to the present unit are Majors Douglas Donald, Charles E. Lemmon and Lowell B. Ashley, Capts. John Tulloch and S. G. Meyer, and Lieuts. George T. McKean and Don M. Murphy. The skeletonized organization will eventually comprise at least forty-two physicians. In the first world war the Harper Hospital unit was headed by Dr. Angus McLean and served first as a Red Cross unit and later as an army unit at Dijon, France, from which point some of its units saw service in the front lines.

DAYTON SPECIALIST UNIT ORDERED TO ACTIVE DUTY

Six of the nine members comprising the Medical Specialist Unit of Dayton, Ohio, were ordered to report for active duty at a naval hospital on January 12. The members of the unit who received orders were Commander Walter M. Simpson, an internist, director of the laboratories at Miami Valley Hospital, Dayton; Lieut. Commanders Harry R. Huston, a surgeon; Marion W. Coleman, a urologist; James L. Sagebiel, a neuro-

psychiatrist; Jerome Hartman, an orthopedic surgeon, and Arthur M. Culler, an ophthalmologist. This unit comprises six nurses also. During his absence Dr. Simpson's place as director of the laboratories at Miami Valley Hospital will be taken by Dr. Melvin Oosting, assistant director of laboratories, and Dr. Simpson's position as director of the medical research at the Kettering Institute will be taken by Dr. H. Worley Kendell, assistant director. This Dayton unit was organized in 1934 at the suggestion of the Surgeon General of the Navy and, although one of the first organized, is now one of many similar medical units.

HAWAII NEEDS MEDICAL SUPPLIES

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, says that an urgent appeal has been received from Queens Hospital, Honolulu, for drugs and instruments with which physicians may help take care of existing casualties. Among the things needed as indicated by the list furnished by the committee are catgut and silk sutures, Luer syringes of various sizes, hypodermic needles, cotton, gauze, bandages and drugs, including unguentine, boric acid ointment, gentian violet powder, rubbing alcohol, phenobarbital, soluble, pentobarbital, procaine hydrochloride, nikethamide, sulfanilamide, sulfathiazole, epinephrine and tetanus antitoxin. Arrangements have been made for the free transportation of these articles from various points in this country to Hawaii by truck, steamer and plane.

NAVY RECOGNIZES ALLERGY AS A SPECIALTY

The commanding officer of the U. S. Naval Medical School, Washington, D. C., recently recommended that allergy be officially recognized as a specialty in the Navy and that post-graduate training in the subject be instituted. The advisory board considered the recommendation and the Surgeon General of the Navy approved it. Arrangements are being made with various medical colleges and with some well known allergists in private practice to provide instruction in this subject to selected naval medical officers.

REAR ADMIRAL STITT AWARDED THE THEOBALD SMITH MEDAL

At the recent annual meeting of the American Academy of Tropical Medicine in St. Louis, Rear Admiral E. R. Stitt, M. C., U. S. Navy, was awarded the Theobald Smith gold medal of the George Washington University, Washington, D. C. Admiral Stitt, a former surgeon general of the U. S. Navy and former president of the Association of Military Surgeons of the United States, is the author of a well known book on tropical medicine and of another on laboratory procedures.

GOVERNMENT TO PROVIDE SOLDIERS WITH SPECTACLES

The War Department announced on January 18 that the army will provide all persons in the military service with spectacles when required and will replace lenses and frames when damaged or lost in the performance of military duty. These spectacles will conform to specifications to be issued by the Surgeon General of the Army. Individuals desiring a different kind must pay for them.

PURCHASE FOUR MILLION SHOES IN MARCH

After conferences in Washington between shoe manufacturers and the U. S. Army quartermaster procurement officers, it was estimated that during March and April the Army will purchase about two million pairs of shoes and that later the purchasing plans will be revised to still higher figures. The shoe manufacturers at present have ample capacity to increase their shoe production to the desired level without increase in factory facilities. The foregoing rate of purchase is about twice that of the Army at present.

PROPERTY OF THE
HOUSE COMMITTEE

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

BORENSTINE, Joseph, 1st Lieut, Boston, Fort Devens, Mass
COJLINS, Ray W, Jr, 1st Lieut, Colchester, Vt, Fort Adams, R I
DOUCET, Charles S, Lieut Colonel, Central Falls, R I, Camp Lee, Va
DUENNEBIER, Harold W, 1st Lieut, Hartford, Conn, Windsor Locks, Conn
DUNBAR, Clarence E, Lieut Colonel, Manchester, N. H, Camp Lee, Va
GRULEE, Clifford G, Jr, 1st Lieut, Boston, Fort Devens, Mass
HASELHUHN, Donald H, 1st Lieut, Springfield, Mass, Army Air Base, Manchester, N H
KEES, Philip A, Captain, Longmeadow, Mass, Westover Field, Mass.
KREIDBERG, Marshall B, 1st Lieut, Boston, Bangor, Maine
LARSON, Karl V, 1st Lieut, Machias, Maine, Camp Lee, Va

LEVIN, AARON H, 1st Lieut, Newton Center, Mass, Fort Devens, Mass
LONG, Norman G, Captain, Lowell, Mass, Fort Banks, Mass
MALCK, John VanS, 1st Lieut, Shelburne, Vt, Fort Devens, Mass
NEFF, Richard S, 1st Lieut, Boston, Fort Devens, Mass
RECORD, Eugene E, 1st Lieut, Boston, Fort Devens, Mass
SCRIBNER, Robert A, 1st Lieut, Haverhill, Mass, Camp Edwards, Mass
STANTLEY, Howard W, 1st Lieut, Worcester, Mass, Camp Lee, Va
SUTCH, Gabriel C, 1st Lieut, Howard, R I, Fort Devens, Mass
WINDUS, Charles E, 1st Lieut, New Haven, Conn, Bangor, Maine
WITTE, Max E, Captain, Bangor, Maine, Fort Devens, Mass

Orders Revoked

CORRIGAN, Francis V, 1st Lieut, Providence, R I

Relieved from Active Duty

CAREY, Francis G, 1st Lieut, Dorchester, Mass
LEVIN, Spencer E, Captain, Boston
ROBEY, Nathaniel C, Captain, Newton Center, Mass
ZENTGRAF, Leo P, 1st Lieut, Manchester, Mass

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware:

BRENNER, Joel Jerome, 1st Lieut, Brooklyn, Camp Upton, N. Y
BREZINSKI, Edward, 1st Lieut, Perth Amboy, N. J, Fort Jay, N. Y.
COMDEN, Nathaniel, 1st Lieut, New York, Camp Croft, S C

ADLER, Harry, 1st Lieut, Elmira, N. Y.
ANDUR, Marvin L, 1st Lieut, Buffalo
AMSTER, Joseph J, 1st Lieut, Brooklyn
BERKOWITZ, Carl, 1st Lieut, New York
GOLAN, Myer E, 1st Lieut, New York
JUCHLI, Rene H, Captain, Amsterdam, N. Y
KANENGISER, Clifford H, 1st Lieut, North Bergen, N. J
LÄNCH, Vincent A, 1st Lieut, Lincoln Park, Mich

Orders Revoked

MAZZA, Peter A, 1st Lieut, Mount Vernon, N. Y.
NIEMAN, Solomon S, 1st Lieut, New Brunswick, N. J
RHOADS, Harmon T, Jr, Captain, New York
ROSENBERG, Albert B, Captain, North Plainfield, N. J
SAFIR, Samuel S, 1st Lieut, Jackson Heights, N. Y
SAMUELS, Sol L, 1st Lieut, Plainfield, N. J.
SOLOVAY, Hyman, 1st Lieut, Brooklyn
THORNE, Irving J, 1st Lieut, New York

THIRD CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, Virginia, District of Columbia and Maryland:

BLANCARELLI, Edmund Joseph, 1st Lieut, Jessup, Pa, Fort Belvoir, Va
BUCKLEY, Michael Lester, 1st Lieut, Arlington, Va, Fort Story, Va
COBERN, Charles Blair, 1st Lieut, Washington, Pa, Carlisle Barracks, Pa
COTTER, John Joseph, 1st Lieut, West Wyoming, Pa, Aberdeen Proving Ground, Md
DE MEULES, Edgar A, 1st Lieut, Philadelphia, Fort Belvoir, Va
DIFRANCESCO, Vincent James, 1st Lieut, Washington, D. C, Fort Eustis, Va
DRAYER, Calvin Searle, Captain, Upper Darby, Pa, Camp Lee, Va
DRIVER, Samuel Francis, 1st Lieut, Troutville, Va, Holabird Quartermaster Depot, Baltimore
EASTHAM, John Philip, 1st Lieut, Culpeper, Va, Indiantown Gap Military Reservation, Pa
EISNER, Abraham G, 1st Lieut, Scranton, Pa, Aberdeen Proving Ground, Md
FARLEY, Otis Rhanor, 1st Lieut, Washington, D. C, Carlisle Barracks, Pa
FARRELL, George Raymond, 1st Lieut, Washington, D. C, Indiantown Gap Military Reservation, Pa
FINEGAN, Eugene F, 1st Lieut, Washington, D. C, Edgewood Arsenal, Md
GAY, James Rowland, 1st Lieut, Baltimore, Fort George G Meade, Md
GOULD, Ernest Alva, 1st Lieut, Washington, D. C, Aberdeen Proving Ground, Md
HAFT, Abraham Seamor, 1st Lieut, Washington, D. C, Carlisle Barracks, Pa
HEIM, Hugh Wilson, 1st Lieut, Schuylkill Haven, Pa, Camp Lee, Va

JOHNSON, Robert Chester, 1st Lieut, Allison, Pa, General Dispensary, U. S. Army, Philadelphia
JONES, Clement Russell, Jr, Captain, Dismont, Pa, Fort Belvoir, Va
KIEHL, Paul Victor, 1st Lieut, Drexel Hill, Pa, General Dispensary, U. S. Army, Baltimore
LUKAS, Alexander Benjamin, 1st Lieut, Shenandoah, Pa, Indiantown Gap Military Reservation, Pa
McKIE, Carlisle Emerson, Jr, 1st Lieut, Pittsburgh, Fort Eustis, Va
McLAIN, Paul Larimer, Captain, Pittsburgh, Camp Lee, Va
MESSMORE, Isaac Lindsey, 1st Lieut, Maysontown, Pa, Carlisle Barracks, Pa
MOORMAN, John Hope, Jr, 1st Lieut, Harrisonburg, Va, Fort Eustis, Va
MULDAWER, Milton Earl, 1st Lieut, Philadelphia, Carlisle Barracks, Pa
OMEARA, Thomas Joseph, 1st Lieut, Swissvale, Pa, Aberdeen Proving Ground, Md
PEARCE, Leroy Sannoner, 1st Lieut, Farmville, Va, Edgewood Arsenal, Md
PEKIN, Thomas Joseph, 1st Lieut, Washington, D. C, Camp Lee, Va
PLUMER, Joseph Neilson, 1st Lieut, Cresson, Pa, Fort Eustis, Va
PORTER, Edgar Lee, 1st Lieut, Embreeville, Pa, General Dispensary, U. S. Army, Philadelphia
ROBINSON, William Herbert, III, 1st Lieut, Roaring Spring, Pa, Fort George G Meade, Md
SCHROEDER, Alfred Richard, 1st Lieut, Washington, D. C, Aberdeen Proving Ground, Md
SPAIR, Richard R, Colonel, Mechanicsburg, Pa, Fort Devens, Mass
SULLIVAN, Herbert Hilary, Lieut Colonel, Pittsburgh, Camp Lee, Va
TANKIN, Louis Haberer, 1st Lieut, Baltimore, Edgewood Arsenal, Md
WAISBROT, Edward Louis, 1st Lieut, Philadelphia, Fort Eustis, Va
WEINER, Marcus Allen, 1st Lieut, Washington, D. C, Carlisle Barracks, Pa
WOOD, Rowland Emery, 1st Lieut, Philadelphia, Fort Eustis, Va

Orders Revoked

MASLAND, Richard Lambert, 1st Lieut, Philadelphia
SETTIF, William Booth, Captain, Baltimore

PENZ, George Henry, 1st Lieut, Pittsburgh
HENDERSON, Charles Henry, Captain, Newton, Va

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bill Introduced.—H. R. 6399, introduced by Representative Randolph, West Virginia, proposes to authorize the appropriation of such sums as may be necessary to enable the commissioners of the District of Columbia to provide for the accommodation, in addition to existing capacity, of 1,000 bed patients in hospitals operated by the District of Columbia.

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 2217 has been reported to the Senate, providing that during the present war personnel of all components of the Army may be detailed as students at technical, professional and other educational institutions or as students, observers or investigators at industrial plants, hospitals and other places. H. R. 6293 has been reported to the House, proposing to establish a Women's Army Auxiliary Corps for non-combatant service with the Army of the United States. H. R. 6430 has passed the House, making appropriations for the Executive Office and sundry independent executive bureaus, boards, commissions and offices for the fiscal year ending June 30, 1943. This bill contains an item of \$4,557,000 for hospital and domiciliary facilities for veterans.

Bills Introduced.—S. 2188, introduced by Senator Reynolds, North Carolina, contemplates the appointment of an officer of the Veterinary Corps as assistant to the Surgeon General of the Army with the rank of brigadier general. S. 2201, introduced by Senator Capper, Kansas, provides that in any case in which the production of a birth certificate is required under any provision of law in connection with the employment of any person by any executive department or other governmental agency, and such birth certificate either cannot be obtained or cannot be obtained without unreasonable delay, proof of the birth of such person satisfactory to the department or agency concerned may be accepted in lieu of the production of the birth certificate. H. Res. 409, submitted by Representative Barry, New York, proposes to create a select committee to be composed of five members of the House of Representatives to investigate the manner in which deferments have been granted under the Selective Training and Service Act of 1940 with a view to determining whether or not the policy of Congress with respect to such deferments is being properly and uniformly applied.

STATE MEDICAL LEGISLATION

Kentucky

Bills Introduced.—H. 95 proposes to enact a new pharmacy practice act which, among other things, proposes to limit the sale and distribution of drugs and medical supplies to pharmacies operating under permits issued by the board of pharmacy. The term "medical supplies," as used in the bill, is defined to include absorbent cotton, bandages, gauze, sutures, compacts, compresses, surgical dressings and other products and appliances used in the diagnosis, cure, mitigation, treatment or prevention of disease. The bill, if enacted in its present form, would seem to cast serious doubt on the legal right of a licensed physician to dispense, and possibly to use, drugs or medical supplies with respect to his own patients. H. 96 proposes to enact what is cited as the Kentucky Food, Drug and Cosmetic Act to regulate the manufacture, sale, distribution and advertising of foods, drugs, cosmetics and therapeutic devices.

Mississippi

Bill Introduced.—H. 205 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate as to the absence of any contagious disease in the party.

New Jersey

Bills Introduced.—A. 9 proposes, apparently, to repeal the medical practice act. A. 41 proposes to authorize the board of chosen freeholders of any county of the second class to create the office of county chief medical examiner. The bill proposes that when any person shall die as a result of violence, or by casualty or suicide, or suddenly when in apparent health, or when unattended by a physician, or within twenty-four hours after admission to a hospital, or in prison, or in a suspicious or unusual manner, the police department of the municipality in which he died, or the superintendent or medical director of the institution in which he died, or the physician called in attendance, shall immediately notify the office of the chief medical examiner and it is then to be the duty of the chief medical examiner to investigate fully the circumstances of the death.

New York

Bills Introduced.—S. 312 proposes to enact a new law regulating the manufacture, sale, distribution and advertising of foods, drugs, cosmetics and health devices. A. 308, to amend those provisions of the medical practice act relating to the practice of physio-therapy, proposes that any person holding a registered license to practice physio-therapy who on the submission of proper credentials satisfies the regents that he has sufficient training or experience may be granted the right to use the physio-therapy modalities of actinotherapy, hydrotherapy, mechanotherapy, thermotherapy and electrotherapy, exclusive of the x-ray, without the supervision of a duly licensed physician. A. 388 proposes to require every local board of health and every health officer to exercise proper and vigilant medical inspection of all persons, 21 years of age or over, infected with poliomyelitis, and, after approval by the state commissioner of health, provide at the remedial stages of the disease surgical, medical or therapeutic treatment or hospital care, and necessary appliances and devices for persons so infected or exposed who cannot otherwise be provided for. One half of the cost of providing such treatment, care and appliances is to be made a charge against the county, or the city of New York, as the case may be, in which the afflicted person resides, and the other one half of the cost is to be paid for by the state. A. 493 proposes to require every physician immediately to give notice to the health officer of the county, city, town or village wherein he resides of every case of infantile paralysis under his care, provided that when such cases occur in districts of less than fifty thousand population not having a whole time health officer or in state institutions, such cases are to be reported directly to the state department of health or its district health officer. A. 504, to amend the workmen's compensation act, proposes to require an employer to provide for the hospitalization of an employee mentally disabled as the result of an accident arising out of and in the course of his employment. S. 215 and A. 226 proposes to create a temporary state commission to make a study of the prevalence, causes and effects of hay fever and kindred ailments and to devise and recommend remedial procedures and legislation designed to effect their treatment, cure and ultimate elimination.

Virginia

Bills Introduced.—S. 16 proposes that, whenever in a civil or criminal proceeding issues arise on which the court deems expert evidence desirable, the court may, on its motion or on the motion of either party, appoint one or more experts, not exceeding three, to testify at the trial. H. 28 proposes to authorize designated state officials and judges to consent to the surgical and medical treatment of persons under 21 years of age who are separated from the custody of their parents or guardians and

are in need of surgical or medical treatment. H. 40 proposes to authorize the respective governing boards of the Medical College of Virginia and of the University of Virginia to establish four annual medical scholarships each, each scholarship to be of an annual value of \$550. A person receiving such a scholarship must agree to pursue the medical course of the school awarding this scholarship until his graduation and, after graduating and completing a term of not exceeding two years as an intern at some approved hospital or institution, to engage continually in the general practice of medicine in a rural community in the state of Virginia, selected by the state health commissioner, for a period of years equal in number to the years that he has been or shall be a beneficiary of the scholar-

ship. H. 51, to supplement the medical practice act, proposes, except as is otherwise provided in the section of the act relating to exemptions, that no person shall practice medicine in any of its branches in the state without a valid, unrevoked certificate or license authorizing such practice issued by the state board of medical examiners and duly recorded as required by law. H. 52 proposes to authorize any court of record having chancery jurisdiction to enjoin and restrain any person from practicing medicine in any of its branches in the state without a valid, unrevoked certificate or license authorizing such practice issued by the state board of medical examiners and duly recorded as required by law.

MEDICAL ECONOMIC ABSTRACTS

THE NATION'S HEALTH

In spite of all the pessimistic outpourings on health conditions, Dr. S. S. Goldwater took a decidedly optimistic outlook in an address before America's Town Meeting of the Air, Dec. 4, 1941. Some of the more significant points brought out in this address are quoted or summarized in the following:

In public health circles it has become the fashion, partly on the basis of loosely compiled statistics of physical defects, to picture the United States as a decadent and decrepit nation. We are told that we are a toothless, almost sightless, people, that we have flat feet, flabby muscles and weak minds. We are warned that we are undernourished, that our vital organs are degenerating, that we are no match for the germs of disease that are within us and all about us.

I refuse to subscribe to this doctrine of despair, for it is a doctrine founded on half truths. It is true that physical defects are common among us, but many of the defects that are used in the compilation of alarmist statistics are only minor defects. Modest doctors of medicine and public health officers often present their depressing tabulations with an apologetic air. Now while it is true that medicine has not yet solved the problem of the common cold and that public health administration is not yet able to guarantee perfect living and working conditions, both professions have accomplished such wonders that an attitude of abject humility ill becomes them. I take off my hat to them!

The familiar indictment asserts that private medical practice, the voluntary hospital system and local health administration have failed. It is implied that medical care must be administered by government, since government alone is in a position to promise that no preventable illness will be disregarded, that

no sick person will be neglected, that no imperfection in medical technic will be tolerated.

I am ready to acknowledge the difficulty of immediately providing prompt and sufficient private medical care for all regions and all classes, but I believe in the practicability of substantial further progress under private and local initiative and control. Although government aid may be required, the limits of self help have not been reached.

There are many hopeful signs. Medical education is improving all the time. A great number of first class hospitals are engaged in research. The unsolved problems of medicine are under constant attack. Hospital administration has been systematized. Many cities and some states are now well supplied with hospital beds. Health centers are rapidly multiplying. Farmers are banding together to secure needed medical service. Industry is subjecting itself to more rigid health supervision. Employers are cooperating with their employees in providing medical care. Housing reform is now an accepted public policy. Discoveries concerning nutrition have made it possible to plan for the better distribution and the wiser use of food. Infant mortality is at a new low. Childbirth has lost most of its terrors. The significance of planned parenthood is understood. Tuberculosis slowly declines. The utilization of hospitals is increasing. Dentistry is being brought into proper focus with medicine. Public health nursing is expanding. Outpatient services are improving. Home medical service is being provided for families on relief.

For the great mass of regularly employed low income workers, a powerful economic barrier to prompt hospital care can be removed by the wider development of voluntary prepayment plans for group hospitalization and related medical care. Such plans, though still in their infancy, already provide hospital service, when needed, for nearly eight million persons.

WOMAN'S AUXILIARY

Georgia

The Woman's Auxiliary to the Fifth District Medical Society held its semiannual meeting, recently, at the Crawford W. Long Hospital in Atlanta. Mrs. J. Harry Rogers, district manager, presided. Among the guests were Mrs. Lee Howard, Savannah, and Mrs. J. Lon King, Macon, president and president-elect respectively of the Woman's Auxiliary to the Medical Association of Georgia; Mrs. W. A. Selman, Atlanta, vice president of the state group; Mrs. Eustace Allen, Atlanta, chairman of revisions for the national group; Mrs. Olin Cofer, counselor from Georgia to the Woman's Auxiliary to the Southern Medical Association; Mrs. Allen Bunce, wife of the president of the Medical Association of Georgia; Mrs. C. W. Roberts, wife of the president of the Fifth District Medical Society, and Mrs. Murdock Equen, president of the Woman's Auxiliary to the Fulton County Medical Society.

Dr. Roberts introduced Dr. Allen Bunce, who spoke on "The Future of Medicine in Georgia." Mrs. King talked on the part that the physician's wife must play in national defense, and

Mrs. Howard stressed the problems of the auxiliary. Mrs. Jeff Richardson, chairman of health films in the Fifth District, told of her plans for this project.

The wives of army physicians stationed at the various hospitals or camps in the vicinity of Atlanta were honor guests at the meeting of the Woman's Auxiliary to the Fulton County Medical Society, recently, at the nurses' home of Crawford W. Long Hospital, Atlanta. Mrs. Murdock Equen, president, presided. Colonel Cooley spoke of Lawson General Hospital, which cares for soldiers throughout the area. Dr. Edgar H. Greene, medical director of selective service for Georgia, exhibited a chart showing the causes for which draftees were rejected.

Tennessee

The newly elected president of the Woman's Auxiliary to the Rutherford County and Stone's River Academy of Medicine, Mrs. S. B. Smith, presided over a recent meeting at the home of Mrs. B. W. Rawlings. Mrs. G. B. Thackston, a guest, spoke on "America in a Postwar World."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

Regional Meeting.—The Northwestern Division of the Medical Association of the State of Alabama met at the Negley Hotel, Florence, January 28 for the following program

Dr John J Shea Memphis, Tenn, The Management of Fractures of the Face
Dr William J B Owings Brent Polymyositis A Personal Experience.
Dr Seale Harris Birmingham, The Food Factor in Winning the War
Dr Ralph C Benson Birmingham Simplicity in Gynecologic Practice
Dr William H Spruell Russellville, Fascia in Hernial Repair

ARKANSAS

New Specialty Group.—The Arkansas Society of Obstetrics and Gynecology was organized at a meeting in Little Rock on December 18 with the following officers Drs Ernest H White, Little Rock, president, Clyde D Rodgers, Little Rock, vice president, and Ruth Ellis Lesh, Fayetteville, secretary-treasurer

Hospital News.—St Edward's Mercy Hospital, Fort Smith, believes that the past year was a record one for an institution of its size and type The hospital has a normal capacity of one hundred beds and sixteen bassinets and is classified as general In the past year there were 3,857 admissions and 586 babies delivered The federal government has recently approved a \$90,000 grant to assist in a \$200,000 expansion program

Society News.—The Ninth Councilor District Medical Society was addressed in Harrison, December 3, by Dr Arthur F Hoge, Fort Smith, among others, on "Cirrhosis of the Liver"—Dr Joseph W Kelso, Oklahoma City, discussed "Repair of Third Degree Lacerations" before a recent meeting of the Pulaski County Medical Society, guests of honor at this session were Dr Herbert Fay H Jones, Little Rock, president of the state medical society, and Drs Melvin E McCaskill Little Rock, Merriman L Norwood, Lockesburg, William T Wootton Hot Springs National Park, Frank Vinsonhaler, Little Rock, Oscar J T Johnston, Batesville, and Albert S Buchanan, Prescott, past presidents of the state society—Dr Roy E Schirmer, Fort Smith, addressed the Sebastian County Medical Society, December 9, on control of venereal diseases

CALIFORNIA

Equine Encephalomyelitis and Mosquito Control.—The twelfth annual conference of the California Mosquito Control Association was held at the University of California at Berkeley, December 15-16 A symposium on equine encephalomyelitis was presented by the following

William B Herms, A M professor of parasitology and entomologist in the experiment station at the University of California, Berkeley, Introduction
Bettrice F Howitt A M associate in research medicine University of California Medical School San Francisco Relationship of Equine Encephalomyelitis and St Louis Encephalitis to Man and Animals in California
William C Reeves, BS division of entomology and parasitology, University of California Medical School, Newer Developments in Knowledge of Insect Hosts and Vectors
Dr William McD Hammon George Williams Hooper Foundation, University of California Medical School, San Francisco, Host Animals of Virus Encephalitis

Speakers in a symposium on mosquito control and national defense were

Dr Bertram P Brown San Francisco director of the state department of public health Introduction
Stanley B Irebarn Ph D, professor of entomology and assistant dean of the College of Agriculture University of California Berkeley, Military Mosquito Control in World War I
Dr Richard H Creel, medical director, U S Public Health Service San Francisco Federal Aid in Mosquito Control Work
I C Peters BS in charge of mosquito control bureau of sanitary engineering California department of health, Mosquito Breeding and Control in Vicinity of Military Zones

A banquet session was addressed by Dr Alfred C Reed professor of tropical medicine at University of California Medical School, San Francisco, on "Problems Involved in Control of Mosquito Borne Diseases Under Tropical Conditions" The second day's program was largely devoted to a "Review of Literature on Mosquitoes for 1940 1941"

COLORADO

Correction—Refresher Courses.—The Colorado State Medical Society will offer a series of refresher courses in Denver on February 16-18 instead of on February 16-17 as was announced in THE JOURNAL, January 24, page 309

Midwinter Postgraduate Clinics.—The tenth annual Midwinter Post Graduate Clinics of the Colorado State Medical Society will be held in Denver, February 19 21 Guest speakers will include

Dr John A Toomey, Cleveland Chemotherapy in Infectious Diseases
Dr Harold O Jones Chicago Management of Pelvic Infections
Dr Benjamin H Orndoff Chicago Endometriosis Its Relation to Sterility and Other Conditions of the Female Pelvis
Dr Carl M Peterson, Chicago Secretary, Council on Industrial Health, American Medical Association, Industrial Health Progress and Reports
Dr Edward H Hashinger, Kansas City, Mo, Hypothyroidism
Dr John Henderson, Philadelphia Human Plasma A Review of Its Preparation and Indications in Military and Civil Practice
Dr Ozro T Woods, Dallas, Texas Care of the Critically Ill Patient
Dr Charles B Huggins Chicago, Endocrine Relationships in Carcinoma of the Prostate
Dr Oliver E Van Alvea Chicago Treatment of the Acute Antrum
Dr James S Speed Memphis Tenn Treatment of Compound Fractures

In addition there will be a guest speaker from the army medical corps to discuss some subject in military medicine. All guest speakers will conduct clinics The annual dinner dance will be held Saturday evening at the Shirley-Savoy Hotel

CONNECTICUT

Meeting on Maternal Care.—Physicians in the Naugatuck Valley and the bureau of child hygiene of the state department of health held a dinner meeting, January 29, to discuss maternal care The speakers were Dr Joseph H Howard, Bridgeport "Relationship of the State Medical Society to the Public Health Program in Connecticut", Dr Stanley H Osborn, Hartford, "Plan of the State Department of Health for Improving Maternal Care in the State," and Dr Edwin F Daily, Washington, D C, "National Scope of Maternal and Child Health Program" The state health department has recently inaugurated a program in maternal care in the Naugatuck Valley area

Society News.—The Bridgeport Medical Society devoted its meeting in December to a symposium on peptic ulcer—The Norwalk Medical Society was addressed, January 14, by Edward T Buckingham LL B, compensation commissioner of Bridgeport, on "Compensation Medicine" The society was addressed, December 10, by Dr Paul Reznikoff New York, on "Importance of White Blood Cell Counts in Disease, Including Infections"—Dr Herbert F Traut, New York, presented the results of two and one-half years' study of vaginal smears after the method of Papanicolaou before the Hartford Medical Society on December 15—Dr Arthur M Fishberg, New York, discussed hypertension before the Waterbury Medical Society on December 11—The New Haven Medical Association was addressed, January 7, by Dr Bela Schick, New York, on allergy—Dr Champ Lyons, Boston, discussed chemotherapy before the New London County Medical Association on Norwich on December 4

DISTRICT OF COLUMBIA

Hospitals Subject to Tax.—According to the Washington Post, the Garfield Memorial and George Washington University hospitals, Washington, were returned to taxable status on January 10 The addition of these two hospitals brought the total of such institutions recently returned to tax rolls to nine The others are Emergency, Casualty, Sibley Memorial Episcopal, Eye, Ear and Throat, Providence, National Homeopathic and Children's hospitals The report stated that the board of commissioners ruled that the institutions were not conducted as purely public charities without charge to inmates, and hence were not entitled to tax exemption It said that the Garfield Hospital has land and buildings assessed at more than a million dollars The nurses' school of the hospital will continue to enjoy tax exemption because it is an educational institution The paper stated that, although denying continued tax freedom for the George Washington University Hospital the commissioners ruled that the adjacent medical school building and its annex should continue on the free list The hospital received \$203,988 in 1940 Despite its description by university officials as a medical school 'teaching hospital,' this does not in the opinion of the board, affect its real status as a privately owned and privately conducted hospital

ILLINOIS

Society News.—Dr. Summer L. S. Koch, Chicago, discussed "Prevention and Care of Infections of the Hand" before the Sangamon County Medical Society in Springfield, December 4. —Dr. Stephen A. Ziemann, Chicago, addressed the St. Clair County Medical Society in East St. Louis, January 8, on "Transversalis Fascia in Its Relationship to the Etiology and Repair of the Inguinal Hernia."

Chicago

The McArthur Lecture.—Dr. Isidor S. Ravdin, George Leib Harrison professor of surgery, University of Pennsylvania School of Medicine, and director of the Harrison Department of Surgical Research at the medical school, Philadelphia, will deliver the eighteenth Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine of Chicago, March 27. His subject will be "A Consideration of Some Problems of Biliary Tract Disease."

Branch Meetings.—The Douglas Park Branch of the Chicago Medical Society was addressed, January 20, by Drs. Russell D. Herrold on "The Sulfa Treatment of Gonorrhea" and Herbert Rattner, "The Five Day Treatment of Early Syphilis."

—Dr. Chauncey C. Maher discussed "Cardiac Arrhythmia" before the Southern Cook County Branch, January 20. —At a meeting of the Irving Park Branch, January 27, Dr. Italo F. Volini spoke on "Sulfonamides with Special Reference to Pneumonia." —The Jackson Park Branch devoted its meeting, January 15, to a symposium on the sulfonamides. The speakers were Drs. Austin E. Smith, acting secretary, Council on Pharmacy and Chemistry, American Medical Association; Leander W. Riba, and Italo F. Volini. —Dr. Wesley W. Spink, Minneapolis, addressed the Northwest Branch, January 16, on "Present Status of Sulfonamide Therapy" and Dr. Chester C. Guy, "Sulfonamides in Surgery."

INDIANA

Changes in Health Personnel.—Dr. Harold J. Halleck, Winamac, was recently appointed health commissioner for Pulaski County for a term of four years. —Dr. Clifford H. Mayfield, Reynolds, has been reappointed health officer of White County for a four year term beginning January 1.

Physician Imprisoned for Defrauding Township.—Dr. Paul B. Arbogast, Vincennes, was recently sentenced to prison for from two to fourteen years for presenting false claims against the Vincennes township poor fund, it is reported. He was refused a suspended sentence and did not appeal the case. He is said to be serving his sentence.

Society News.—Dr. Joseph R. Crowder, Sullivan, spoke on "X-Ray Studies of the Chest" before the Sullivan County Medical Society in Sullivan, January 7. —The Fort Wayne Medical Society was addressed, January 20, by Dr. Samuel R. Mercer, Fort Wayne, on "Lupus Erythematosus" with presentation of clinical cases. —Drs. Joseph C. Lawrence Jr. and Harold D. Lynch, Evansville, discussed "Management of Acute Anterior Poliomyelitis" at a meeting of the Vanderburgh County Medical Society in Evansville, January 13. —Dr. Carl H. McCaskey, Indianapolis, addressed the Tippecanoe County Medical Society in Lafayette, January 13, on "Infections of the Vestibule of the Nose." —The Fountain-Warren County Medical Society's meeting, January 1, in Kramer was addressed by Dr. Marine R. Warden, Danville, Ill., on "Radiology." —Dr. Ernest R. Carlo, Fort Wayne, spoke on "Effect of War on Child Health" before the Whitley County Medical Society in Columbia City, January 13. —Dr. Bert E. Ellis, Indianapolis, discussed "Otitis Media and Mastoiditis," January 15, at a meeting of the Henry County Medical Society, Newcastle.

KANSAS

New Director of Local Health Service.—Dr. Henry H. Asher, Wichita, health officer of Sedgwick County for two years, has been appointed director of the division of local health of the state board of health, Topeka. Dr. John W. Turner, Marion, will be the new health officer of Sedgwick County.

Society News.—The Wyandotte County Medical Society was addressed, January 20, by Drs. William H. Algie on "Pneumonia" and Paul M. Krall, Kansas City, "The Sulfa Compounds in Therapeutics." —At a joint dinner meeting of the Kansas Obstetrical and Gynecological Society and the Sedgwick County Medical Society in Wichita, January 6, Dr. Willard M. Allen, St. Louis, spoke on "Clinical Use of Sex Hormones." Preceding this meeting Dr. Allen discussed "Significance of Abnormal Vaginal Bleeding."

LOUISIANA

Dr. Musser Resigns as President of State Board of Health.—Dr. John H. Musser, professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans, has resigned as president of the state board of health, effective February 1, newspapers report, because his full time service would be required at the Tulane University Medical School. Gov. Sam H. Jones appointed Dr. Christopher L. Mengis, health officer of Iberia Parish health unit, New Iberia, as president of the state board. Early in 1941 Dr. Musser was in charge of a reorganization of the state board of health. Dr. Robert H. Onstott, U. S. Public Health Service, New Orleans, is executive officer of the board and Dr. Ford S. Williams, New Orleans, assistant state health officer. Dr. Mengis is a native of Vicksburg, Miss., graduating at Tulane in 1900. He has been connected with the state department of health since 1936, newspapers report, serving at one time as head of the division for crippled children.

MARYLAND

Personal.—Dr. Charles Reid Edwards, professor of clinical surgery, University of Maryland School of Medicine, Baltimore, has been appointed chief of emergency medical service for Maryland; the appointment was made on a recommendation by the Medical and Chirurgical Faculty of Maryland.

De Lamar Lectures.—The Johns Hopkins University School of Hygiene and Public Health, Baltimore, sponsored the following De Lamar Lectures: Dr. Karl F. Meyer, professor of bacteriology, and director, George Williams Hooper Foundation, University of California Medical School, San Francisco, "The Ecology of Plague," December 9, "The Ecology of Psittacosis," December 10 and Dr. Lowell T. Coggeshall, professor of epidemiology, School of Public Health, University of Michigan, Ann Arbor, "Immunity in Malaria," December 16.

MICHIGAN

Personal.—Dr. Clarence P. Lathrop, Hastings, was guest of honor at a meeting of the Barry County Medical Society, December 11, in recognition of his completion of fifty years in the practice of medicine. —Dr. and Mrs. Byron E. Burnell, Flint, observed their fiftieth wedding anniversary, December 30, with a reception to their friends. Dr. Burnell, who has been practicing in Flint since 1901, is a past president of the Genesee County Medical Society.

County Secretaries' Conference.—The Michigan State Medical Society conducted its annual county secretaries' conference at the Olds Hotel, Lansing, January 25. The speakers were:

- Dr. Andrew S. Brunk, Detroit, Progress Report on Michigan Medical Service.
- Hazen J. Payette, LL.B., Detroit, Physician's Income Tax.
- L. A. Potter, Lansing, Unity.
- Earl W. Munshaw, LL.B., Grand Rapids, Michigan's Intangible Tax Law.
- Mr. M. C. Smith, Lincoln, Neb., Design for a Statewide FSA Medical Program.
- Arthur A. Holmes, major, U. S. Army, Medical Procurement and Assignment.
- Don Leonard, Lansing, captain, Michigan State Police, England's Civilian Defense—An Eyewitness Account.
- Dr. Harold A. Furlong, Lansing, Emergency Medical Service in Community Defense.

New Director of Mental Hygiene.—Dr. Frank F. Tallman, clinical director of the Rockland State Hospital, Orangeburg, N. Y., has been appointed director of mental hygiene of the Michigan State Hospital Commission, Lansing. Dr. Tallman will have charge of the organization, supervision and coordination of the state child guidance clinic system; the establishment of an outplacement (boarding and colony) program; coordination and expansion of the hospital outpatient clinics in collaboration with the medical superintendents, with especial attention as to the preventive and parole aspects, and the development of an integrated statewide educational mental hygiene program. The state hospital commission is a seven member board charged with the responsibility of supervising and directing the state mental hospitals and of carrying on a program of prevention of mental illness. It is a separate and distinct agency of state government not connected with the state department of health, the department of public welfare or any other agency. Charles F. Wagg, Lansing, as the executive secretary of the commission, carries out its functions with respect to state hospitals. Dr. Tallman will direct the activities in the field of prevention. He graduated at the University of Alberta Faculty of Medicine, Edmonton, in 1927.

NEW JERSEY

Annual Meeting of Surgeons.—The Society of Surgeons of New Jersey held its annual meeting in Trenton, January 28. Rev. Alphonse M. Schwitala, S.J., dean of St. Louis University School of Medicine, St. Louis, was the speaker in the evening.

Society News.—Dr. Zacharias Bercovitz, New York, addressed the Bergen County Medical Society, January 13, on "Diagnosis and Treatment of Disorders of the Intestine."—The Morris County Medical Society was addressed in Morris Plains, January 15, by Dr. William Goldring, New York, on "Diagnosis and Treatment of Nephritis and Hypertension."—Dr. Tracy J. Putnam, New York, discussed "Epilepsy: Its Nature and Treatment" before the Atlantic County Medical Society on December 12.

NEW YORK

Graduate Courses.—January 20 marked the opening of a course in sulfonamide therapy, arranged by the state medical society and the state department of health for the Oneida County Medical Society at the Utica State Hospital, Utica. The series follows:

Drs. David D. Rutstein, Albany, Behavior of Sulfonamides in the Body and Principles for Their Use, and Joseph Ernest Del Monaco, Syracuse, Local and Internal Use of Sulfonamides in Surgery, January 20. Drs. Thomas F. Laurie, Syracuse, Treatment of Genitourinary Infections in the Male, and Ferdinand J. Schoeneck, Syracuse, Sulfonamides in Obstetrics and Gynecology, January 27. Dr. Joseph J. Bunim, Brooklyn, Treatment of Pneumonia, and Abraham Clement Silverman, Syracuse, Treatment of Meningitis, February 3.

A course in general medicine opened on February 3 for the Madison County Medical Society at the Hotel Oneida, Oneida. Dr. Eugene R. Marzullo, Brooklyn, spoke on "Practical Considerations of Blood Dyscrasias." On February 10 Dr. Milton B. Handelsman, Brooklyn, will discuss "Diabetes: Its Modern Interpretation and Treatment," and on February 17 Dr. Albert F. R. Andresen, Brooklyn, "Treatment of Gallbladder Disease." The state society and the state health department cooperated with the Onondaga County Medical Society in Syracuse in the following course:

Drs. Karl Jefferson Thomson, Mount McGregor, Behavior of Sulfonamides in the Body and Principles for Their Use, and Frank L. Meloney, New York, Local and Internal Use of Sulfonamides in Surgery, January 15. Dr. Rolla R. Wolcott, passed assistant surgeon, U. S. Public Health Service, U. S. Marine Hospital, Staten Island, Treatment of Genitourinary Infections in the Male, and Charles H. Peckham Jr., Coopers-town, Sulfonamides in Obstetrics and Gynecology, January 22. Dr. Norman H. Plummer, New York, Treatment of Pneumonia and Meningitis, and Frank Glenn and Harry Backwin, Panel Discussion, January 29.

New York City

Motion Picture on Treponema Pallidum.—Theodor Rosebury, D.D.S., assistant professor of bacteriology, Columbia University College of Physicians and Surgeons, showed a sound motion picture on Treponema pallidum at the New York Academy of Medicine February 3. Dentists, physicians, nurses and medical students were invited to attend.

Conference on Radiology.—The Eastern Conference of Radiologists was held at the Hotel Biltmore on January 23-24. Included among the speakers were:

Dr. Raymond L. Pfeiffer, Roentgenography of Exophthalmos.
Dr. Alexander B. Gutman, Biochemical Aids to Roentgenologic Problems in the Differential Diagnosis of Bone Disease.
Dr. Arthur F. Hunter, Roentgen Therapy of Keloids.
Dr. William E. Howes, Brooklyn.
Dr. Harold Neuhof, Circumscribed Agent
Dr. John M. Kenney, Radioactive in Malignant Neoplastic Disease.
Dr. Cornelius P. Rhoads, Recent Studies in the Production of Cancer by Chemical Compounds.

Medical Bureau for Education Board Reorganized.—The medical division of the city's board of education has been reorganized to include a chief medical examiner and a part time psychiatrist. The action was approved at a meeting of the board on January 14. In addition there will be six part time medical examiners, a medical inspector aurist, a laboratory technician and a registered nurse, and a panel of psychiatrists. According to the New York Times the board appointed a committee to study the reorganization, at which time Dr. Emil Altman had been chief examiner. Since his retirement several months ago Dr. John E. Conboy has been acting chief examiner. The reorganization follows closely recommendations made by the New York Academy of Medicine, it was stated.

Hospital Services Increase Benefits.—The Associated Hospital Service has announced added benefits under its Three Cents a Day Plan, representing an annual increase of about \$1,000,000 in payments to hospitals. The discount allowance of 25 per cent of the hospital's regular charges for semiprivate

service, which has heretofore been granted after the initial twenty-one day period of full hospital service in any contract year, is increased to 50 per cent and extended to ninety days in any contract year. In maternity cases and conditions arising out of and during pregnancy the present credit of \$5 a day for a period of ten days will be increased to \$6 a day. The service also announced that \$1,500,000 has been set aside by the board of directors as a reserve to meet epidemic or war emergency demands. The plan's defense policy of continuing the enrolment privileges of men in the armed forces for whom medical care is temporarily the obligation of the federal government now applies to six thousand contracts. Under this policy, subscription charges are discontinued for single men and reduced for married men who wish to continue the protection of their families.

OHIO

Photographs of Physicians.—The families of the late Drs. Edwin M. Huston and Clement D. Smith, Dayton, have presented pictures of the physicians to the Montgomery County Medical Society, Dayton. Both physicians are past presidents of the society, which has a collection of pictures of all its former presidents. Dr. Huston was at one time president of the Ohio State Medical Society.

Director of Venereal Disease Control.—Dr. Harold J. Gordon, who has for a number of years been in charge of the venereal disease program of the Akron health department, has been appointed venereal disease control officer of the state department of health. At the time of his recent appointment Dr. Gordon was editor of the bulletin of the Summit County Medical Society and chairman of the committee on medical preparedness. He is a retired major of the army and was awarded the distinguished service cross for service overseas during World War I.

OKLAHOMA

"Your Health and You."—The Town Club of Oklahoma City is presenting a series of free health talks, with the approval of the Oklahoma County Medical Association, to acquaint the public with the best methods of prevention of disease and the promotion of health. All the speakers are from Oklahoma City:

Dr. John Walker Morledge, Health Problems Today and Tomorrow, November 5.
Dr. Charles P. Bondurant, What You Should Know About Cancer, December 3.
Dr. James Floyd Moorman, Colds, Influenza and Pneumonia, January 7.
Dr. Bert E. Mulvey, Heart Disease: Its Prevention and Care, February 4.
Dr. C. J. Fishman, The Brain in Health and Disease, March 4.
Dr. Bert F. Keltz, Your Weight and How to Control It, April 1.
A. C. Seids, D.D.S., These Teeth of Mine, May 5.
Richard H. Graham, Medicine on the March, June 3.

PENNSYLVANIA

Society News.—The Westmoreland County Medical Society devoted its meeting in Latrobe, February 3, to a symposium on treatment of compound fractures of the extremities; the speakers were Drs. Jack H. Hamill, Latrobe; William J. Potts, Richard S. Cole and Dennis R. Murdoch, all of Greensburg; Anthony L. Cervino, Jeannette, and Robert C. Johnston, New Kensington.

Philadelphia

Popular Science Talks.—"Science in War" is the theme of a series of seven lectures which opened on February 4 at the Philadelphia College of Pharmacy and Science with a talk by Ivor Griffith, Ph.M., entitled Health and the War. Other speakers will be:

Donald P. LeGalley, Ph.D., Physics in the War, February 11.
Freeman P. Stroup, Ph.M., Conservation, February 18.
Arthur Osol, Ph.D., Chemistry in the War, February 25.
George Rosengarten, Ph.D., Signals and Detectors, March 4.
Linwood F. Tice, M.Sc., Life Saving Medicines, March 11.
Louis Gershenfeld, Pharm.M., Bacteria and the War, March 18.

Pittsburgh

Society News.—The Allegheny County Medical Society was addressed in Pittsburgh, January 20, among others, by Dr. James S. Taylor, Altoona, on "Maternal and Fetal Mortality." A symposium on pneumonia constituted the meeting of the society, December 16; the speakers were Drs. William W. G. MacLachlan, John F. McCullough, George J. Kastlin, Pittsburgh, and Harrison F. Flippin, Philadelphia. —Dr. Samuel M. Dupertuis, among others, addressed the Pittsburgh Pediatric Society, December 19, on "Field of Plastic Surgery in Children." —Dr. Walter S. Nettrour, among others, discussed "Congenital Bronchoesophageal Fistula with a Case Report" before the Pittsburgh Surgical Society, January 16.

TENNESSEE

Health Units Merge.—The Memphis and Shelby County health departments recently consolidated with Dr. Lloyd M. Graves, Memphis, as the director. It was reported that the action was taken to reduce the city's budget. A contract was signed under which the county agreed to pay all expenses of the health service, it was stated.

Lectures at Meharry by Haven Emerson.—Dr. Haven Emerson, for many years professor of public health administration and director of the Institute for Public Health, Columbia University College of Physicians and Surgeons, New York, delivered a series of public lectures at Meharry Medical College, Nashville, December 2-3. His subjects were "Administrative Medicine for Care of the Sick and Public Health," "Natural History of Diphtheria in New York City from Its First Appearance to Date," "Alcohol as a Public Health Problem" and "Diabetes as a Problem of Preventive Medicine."

Society News.—Dr. Carrington Harrison, Nashville, discussed "Late Results in Treatment of Perforated Peptic Ulcer" before the Davidson County Medical Society in Nashville, January 13.—The McMinn County Medical Society was recently addressed in Athens by Dr. William S. Muse, Knoxville, on "Kidney Complications Following the Use of Sulfanilamide and Its Derivatives."—The Washington, Carter and Unicoi Counties Medical Society was addressed in Johnson City, December 4, by Dr. Milton Smith Lewis, Nashville, Tenn., on "Management of the Occipitoposterior Position with Report of 1,392 Collected Cases."

GENERAL

Infantile Paralysis Fund Aids Soldiers' and Sailors' Dependents.—Chapters of the National Foundation for Infantile Paralysis will put the money received by them this year from the President's Birthday Celebration to a new use. In accordance with an agreement between President Roosevelt and the national foundation a part of the funds received by the chapters will be used wherever necessary to assist the dependents of any man in the military or naval service of the United States who becomes a victim of infantile paralysis while in the service. The foundation will issue regulations authorizing this expanded defense activity of the chapters.

American Orthopsychiatric Association.—The nineteenth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler, Detroit, February 19-21. One general session will be devoted to "Research in Child and Youth as Defense Effort." There will be round table discussions on "Orthopsychiatry and the National Defense," "College Mental Hygiene," "The Provision of Psychiatric Services to Rural Areas," "Psychoanalytic Orientation in Family Case-work" and "Present Day Trends in the Functions of the Clinical Psychologist." A special section meeting will be held on "Orthopsychiatry and the Profession of Education."

Special Society Elections.—Dr. Willis D. Gatch, Indianapolis, was elected president of the Western Surgical Association at its recent annual meeting in St. Paul. Other officers included Drs. Elmer M. Jones, St. Paul, and E. Eric Larson, Los Angeles, vice presidents; Arthur R. Metz, Chicago, secretary, and Verne C. Hunt, Los Angeles, treasurer. The next annual meeting will be held in Memphis in December.—The American Society of Anesthetists chose the following officers among others at its annual meeting December 11: Drs. Wesley Bourne, Westmount, Que., Canada, president; Frederick A. D. Alexander, Albany, N. Y., Urban H. Eversole, Boston, Hubert R. Hathaway, San Francisco, vice presidents, and Paul M. Wood, New York, secretary.

Schering Corporation Officials Suspended.—As a step toward "smashing completely a long range German scheme to control an important segment of the pharmaceutical market in the western hemisphere," the U. S. Treasury announced on January 29 that it had suspended President Julius Weltzien and seven other officials of the Schering corporation of Bloomfield, N. J., manufacturers of various medicines essential to the war effort, the Chicago Daily Tribune reported. Schering corporation is a subsidiary of Schering A. G. of Berlin, Germany. Production has been under treasury supervision since the Japanese attack on Pearl Harbor, the Tribune stated. The eight company officials were barred from the Schering premises, their personal accounts were blocked, and employees of the company were forbidden to communicate with them.

Examinations in Obstetrics and Gynecology.—The American Board of Obstetrics and Gynecology announces that the general oral and pathologic examinations (part 2) for all candidates (groups A and B) will be conducted at Atlantic City, N. J., by the entire board from Wednesday June 3

through Tuesday June 9, 1942 prior to the opening of the annual meeting of the American Medical Association. Application for admission to group A, part 2, examinations must be on file in the secretary's office not later than March 1. It will greatly facilitate the work of the board if applications are filed as far as possible in advance of the closing date for their receipt. Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates. Candidates for reexamination in part 2 must make written application to the secretary's office before April 15. Dr. Paul Titus is secretary of the board, 1015 Highland Building, Pittsburgh.

Certification of Proctologists.—The National Proctologic Certification Committee has been established under the sponsorship of the Section on Gastro-Enterology and Proctology of the American Medical Association, the Section on Proctology of the Southern Medical Association, the American Proctologic Society and the Mid-West Proctologic Society. Representatives from each group will serve overlapping four year terms on the committee, which is currently made up of Drs. Louis J. Hirschman, Detroit, chairman; Walter A. Fansler, Minneapolis, vice chairman; Louis A. Buie, Rochester, Minn.; Edward G. Martin, Detroit; Descum C. McKenney, Buffalo; Marion C. Pruitt, Atlanta, Ga.; Frank G. Runyon, Reading, Pa.; Frank C. Yeomans, New York, and Curfice Rosser, Dallas, Texas, secretary. The new committee will cooperate with the American Board of Surgery in passing on the qualifications of applicants who desire certification in proctology and will have charge of that portion of the examination of these applicants covering the diseases and surgery of the colon, rectum and anus. A Founders' Group has been instituted, composed primarily of those who have practiced proctology for fifteen years or who are professors or assistant professors of proctology. The preliminary group was nominated by the original American Board of Proctology, which was responsible for the creation of the new certification committee and was subject to a veto of the American Board of Surgery. Additions to this group will be made until Jan. 1, 1944. Additional information may be obtained from Dr. John Stewart Rodman, secretary of the American Board of Surgery, 225 West Fifteenth Street, Philadelphia.

Annual Report of Commonwealth Fund.—The Commonwealth Fund reported January 19 that it had expended \$1,841,332.46 in the year ended Sept. 30, 1941 for purposes associated with the "welfare of mankind." Of this total more than \$262,000 was appropriated for public health activities in Oklahoma, Tennessee, Mississippi, Alabama and Massachusetts. Mental hygiene activities in the United States and England received \$156,820. Special grants totaling \$366,712 went to medical research projects in various universities, medical schools and hospitals, the largest appropriation of \$111,177 going to a study of arthritis at Harvard Medical School, and the second largest, \$42,000, to research in the function of the kidney at the University of Pennsylvania School of Medicine, Philadelphia. This project has been suspended because Dr. Alfred Newton Richards and his principal research associate, Dr. Arthur M. Walker, have been called to serve with the Committee on Medical Research in the Office of Scientific Research and Development. Other subjects covered by the fund's miscellaneous grants included air borne infection, bacterial nutritive requirements, chemical factors involved in resistance to disease, relation of endocrines to growth and development, mechanism of heart failure, immunology, influenza bacillus, chronic nephritis, peripheral circulation, pneumonia, poliomyelitis, respiratory physiology, rheumatic fever, the streptococcus, the vaginal smear as a diagnostic method and the etiology of vascular disease.

The fund gave support in twenty-eight states and in Great Britain. Of thirty-eight separate projects aided by the fund only three were new, two in New York and one in Chicago. In New York these were a clinical statistical review of a series of cases of essential hypertension at the Columbia-Presbyterian Medical Center and a study of gynecologic diagnostic methods at Cornell University Medical School. The Chicago project is a study of cancer producing substances from human tissues at the University of Chicago. At five schools of medicine the fund subsidized departments of preventive medicine, and special provision was made for the expansion of this department at Tulane University of Louisiana School of Medicine, New Orleans. The department of psychiatry at the University of Louisville was subsidized, and at four medical schools the fund helped to meet the cost of borderline services designed to link the departments of psychiatry and pediatrics. A grant was made to the Peter Bent Brigham Hospital in Boston to enlarge a psychiatric service forming part of the department of medicine. No new hospital award was made.

during the year, but a community hospital at Pittsfield, Ill., was completed and one at Mount Pleasant, Mich., was begun. The capacity of a hospital at Kingsport, Tenn., was doubled, the cost being divided between the fund and the community. The twelve hospitals already in service under this program were used almost to normal working capacity, and their earned income rose faster than their operating expenses, according to the report.

Since the war began the fund has set aside \$685,000 for war relief and related activities. Direct gifts have been made to the British War Relief Society, the United China Relief, the Greek War Relief Association, the American Field Service, the American Friends Service Committee, the United Service Organizations and the American Red Cross. It has contributed to the Harvard-Red Cross Epidemiological Unit, now operating a hospital and field service for communicable disease control in England, and to the American Hospital in Britain.

CANADA

New Division of Nutrition.—The Department of Pensions and National Health of Canada has established a division of nutrition with Lionel B. Pett, Ph.D., Edmonton, Alta., as director. Miss Marion Harlow, Montreal, is assistant director. According to the *Canadian Public Health Journal* the new division has a limited budget and it will be necessary to secure the cooperation of all existing agencies to undertake a national program of nutrition education.

Graduate Course in Therapeutics.—A postgraduate course in therapeutics will be held by the University of Manitoba Faculty of Medicine, Winnipeg, February 11-13. Guest speakers will be Drs. Cecil J. Watson, professor of internal medicine, University of Minnesota Medical School, Minneapolis, and William F. Gillespie, professor of surgery, University of Alberta Faculty of Medicine, Edmonton. On February 13 Dr. Gillespie will address a meeting of the Winnipeg Medical Society on "Physiological Principles in the Repair of Inguinal Hernia," and Dr. Watson, "Some Physiological and Clinical Aspects of Jaundice."

LATIN AMERICA

Scientific Conference in Mexico.—An Inter-American Scientific Conference will be held in Mexico, February 15-26, as a part of the dedication of the new National Astrophysical Observatory. Most of the sessions and lectures will be held at Puebla, including the dedicatory exercises on the morning of February 17. Dedicatory addresses will be given by President Manuel Avila Camacho and the governor of Puebla. For special academic ceremonies an excursion will be made to Morelia on February 23 and 24, with the final sessions being held in Mexico City. The new observatory is situated on land provided by the government of the state of Puebla, near a small town of Aztec origin called Tonanzintla, about 80 miles east of Mexico City.

Argentine Clinic to Be Center for Cyclotron Products.—The Instituto de Radiologia de Fisioterapia Medica del Hospital de Clinicas in Buenos Aires, Argentina, will be the permanently established center at which treatment with the cyclotron products may be had in South America, according to the University of California *Clip Sheet*. The first shipment of radioactive phosphorus has been sent to the institute by the University of California Radiation Laboratory, Berkeley, and it is intended to send a shipment of 10 millicuries by Pan American Airways every two weeks. Previously a few shipments were sent to Lima, Peru, but these were not regular, the *Clip Sheet* stated. Radioactive phosphorus retains its radium-like qualities for fourteen days, after which it is not active enough to be useful. The shipments arrive in Buenos Aires in about two or three days and are thus useful for more than ten days. The cyclotron product has been found beneficial in the treatment of leukemia.

CORRECTIONS

Finlay Institute of the Americas.—In the current comment on the Finlay Institute of the Americas in *THE JOURNAL*, January 17, page 230, the name of Morton Kahn, a member of the Scientific Advisory Committee, was inadvertently omitted.

Alwin Pappenheimer Jr. Receives Lilly Award.—*THE JOURNAL*, January 24, page 310, reported that the Eli Lilly Award of \$1,000 and a bronze medal, presented during the meeting of the Society of American Bacteriologists in Baltimore, December 30, had been given Dr. Alwin M. Pappenheimer, professor of pathology, Columbia University College of Physicians and Surgeons. *THE JOURNAL* should have reported

that this award is given to a scientist under 35 years of age. This year it went to Alwin M. Pappenheimer Jr., Ph.D., assistant professor of bacteriology, New York University College of Medicine, New York, for his work in developing a new science combining bacteriology, chemistry, physics and nutrition in the treatment of disease.

Government Services

Positions Open Soon in Panama Canal Service

The U. S. Civil Service Commission expects to begin accepting applications on February 16 for physician positions in the Panama Canal Service. The formal announcement which will be issued on that date will give details as to the training, age, physical and other requirements. Copies will be obtainable, with the application forms, at any first or second class post office, or by writing to the Civil Service Commission, Washington, D. C., after February 16. These positions pay about \$4,000 a year. The duties are described as follows:

To serve as district physician in a small government dispensary; as such to have general supervision over all medical and surgical activities in the dispensary; to operate a general medical and surgical clinic, to examine and vaccinate school children; to examine new employees of the Panama Canal to determine their fitness for entering the service; to attend emergency injury cases; to visit patients day or night; to diagnose cases and treat patients in their homes and on board ships, and to be in charge of business activities of dispensary such as ordering of supplies, care and upkeep of buildings and equipment, and accountability for property and cash.

Doctors are urged to keep this notice in mind and apply for further details after February 16.

Examination for Appointment in Public Health Service

The U. S. Public Health Service announces an examination to establish eligibility for appointment in the commissioned corps of the service in the grade of assistant surgeon (medical only). Applicants must not have passed their thirty-second birthday on the date the examination is taken, must be citizens of the United States, must be graduates of an approved medical college and must have completed or will complete by July 1 next at least one year of internship or its equivalent. The compensation of officers in the grade of assistant surgeon, both Regular and Reserve Corps, is \$3,158 a year with dependents and \$2,699 a year without dependents.

The board of examiners will be in the following places at 9 a. m. on the dates specified. Candidates should arrange to have their physical examinations completed and prepare their autobiographies at any one of the following listed places just prior to the date shown:

U. S. Marine Hospital, Boston	February 9
U. S. Marine Hospital, Staten Island, N. Y.	February 10
U. S. Marine Hospital, Baltimore	February 12
U. S. Marine Hospital, Norfolk, Va.	February 13
U. S. Marine Hospital, Cleveland	February 16
U. S. Marine Hospital, Louisville, Ky.	February 17
U. S. Public Health Service, Washington, D. C.	February 20
U. S. Marine Hospital, Chicago	February 23
218 Federal Office Building, Minneapolis	February 24
U. S. Marine Hospital, Seattle	March 2
U. S. Marine Hospital, San Francisco	March 6
U. S. P. H. S. Relief Station, 424 Federal Bldg., Los Angeles	March 9
Colorado Psychopathic Hospital, Denver	March 11
U. S. Marine Hospital, Kirkwood, Mo.	March 13
U. S. P. H. S. Hospital, Fort Worth, Texas	March 27
U. S. Marine Hospital, New Orleans	March 30
Liaison Office, U. S. P. H. S., Room 319 Grant Bldg., Atlanta, Ga.	March 31

Those persons who complete the physical examination and certain other portions of the examination consuming from one to three days will be permitted to participate later in the written examination beginning on April 7, either at the place where the physical examination was conducted or at some other nearer point. The written and clinical portions of the examination will consume about five days. Any travel expenses to be incurred must be defrayed by the applicants. Applicants may obtain application blanks by writing to the Surgeon General, U. S. Public Health Service, Washington, D. C. These forms may be filled out and delivered personally to the board of examiners, or blanks may be had from the board at the time the applicant appears for examination. Applicants will be required to present their diplomas and evidence of United States citizenship, to the board. If naturalized, naturalization certificate should be presented to the board. Candidates born in the United States who pass the entire examination will be required to prove citizenship before being offered appointment. National Board diplomates are required to present their certificates to the board.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 20, 1941.

The British Population Problem

All over the world today there is a population problem. In the more backward countries the birth rate is too high for general prosperity, while in the more advanced countries it is not high enough to maintain the population. In an address to the Devonshire club the duke of Devonshire, undersecretary of state for India, took for his subject "Empire." One of the difficulties arising from the war was the populating of the empire. The day must come, and in the not very distant future, when, in spite of the considerable increase in the duration of life, the British population would begin to shrink rapidly. We needed a birth rate of 19.5 per thousand but had at present one of only 16. The dominions were also faced with the problem of a diminishing population in the near future. When they had a vastly larger population the peace of the world would be secure. He suggested that the dominion governments might investigate the possibility of increasing their populations by admitting the peoples of northern countries, such as Denmark, Sweden and Norway, who to a large extent shared our views and were of the same blood.

War Nurseries

A feature in this war, as of the last, is the extensive use of female labor both directly in the war effort, as in munition work and in auxiliary services to the fighting forces, and indirectly in releasing men by performing work which in peace time is done solely by them, such as that of bus and street car conductors and railway porters. At present there is an urgent call for more women in the war industries, particularly for strong young women with recent industrial experience. But many such women are mothers of young children and cannot be expected to do work efficiently, or even at all, unless assured that their children are being well cared for during their absence from home. Not unmindful of this, the Ministry of Labor has established nurseries for the children of war workers. In June last this provision was expanded; the government took full financial responsibility for the nurseries, which were opened to the children of all women in full time employment. Their administration was placed in the hands of a joint staff of the Ministry of Health and the Board of Education, the local authority responsible being the Maternity and Child Welfare Authority. The difficulty of establishing these nurseries in the numbers they are required is now pressing.

Concession to Alien Physicians

Mainly to meet the case of Jewish physicians, who were penalized by the Germans, a new defense regulation has been made which provides that a foreign physician who has passed the necessary examinations for a foreign diploma but was debarred from practice in his own country by racial legislation may be given temporary registration in Britain. Before this it was necessary for a foreign physician to hold a diploma before he could be registered and so become legally entitled to practice. Another change is that an alien or oversea physician who fulfils the other prescribed conditions may now be employed in private practice as an assistant to a physician on the permanent register. Any physician who does not possess any United Kingdom qualification may be registered for the period of the war if he satisfies the General Medical Council that he is of good character, holds a medical diploma recognized as sufficient by the council and has been selected for employment as a medi-

cal officer in an approved hospital, institution or service, or as assistant to a physician on the permanent register.

Apart from American physicians, who are dealt with under a special order, four hundred and seventy alien physicians are employed in the service of this country. Of these three hundred and eighty-five are employed in hospitals, thirty-three in public health appointments and fifty-two as ship surgeons or in other miscellaneous posts. In addition twenty-four have received commissions in our fighting forces, apart from those serving in the allied forces.

PARIS

(From Our Regular Correspondent)

Dec. 1, 1941.

The Food Problem

The food provided in the different departments of France is unequal, although there is a uniform ration card. Some not rationed foods are still to be found in some departments. The supply, however, has diminished, and on account of the war these districts do not have enough food for their own requirements. On the other hand, the providing of food for the cities is aggravated by transport difficulties due to the shortage of coal and gasoline. On the whole, people living in the open country are better provided for than are the people in the cities, just as it was in the the last war. The government of Vichy is trying to organize the distribution of food by means of special commissions and is endeavoring to accumulate stocks for the coming winter. Price regulation for all products has been adopted.

THE RATION CARD FOR OCTOBER AND NOVEMBER

In October and November the following rations were granted: 275 Gm. (9 ounces) of bread a day for an adult. A weekly meat ration with bones ought to have amounted to 250 Gm. (8¾ ounces) but actually amounted to only 100 to 200 Gm. (3½ to 7 ounces). The sugar ration was 125 Gm. (4 ounces) a week, the cheese ration 55 Gm. (nearly 2 ounces), the fat ration 110 Gm. (3⅞ ounces), which means 55 Gm. less than in September. This fat ration included only 25 Gm. (⅞ ounce) of butter for the whole month. Sixty Gm. (2 ounces) of nutritious paste a week were granted and 1 Kg. (2¼ pounds) of potatoes. The coffee ration amounted to 60 Gm. a month.

Laborers got a bread supplement of 75 Gm. (2½ ounces) a day, a weekly meat supplement of 100 to 225 Gm. (3½ to 8 ounces) and a fat supplement of 75 to 150 Gm. (2½ to 5 ounces) a week.

The daily bread ration for children up to 3 years of age is 100 Gm. (3½ ounces), for children between 3 and 6 years 200 Gm. (7 ounces), between 6 and 13 years 275 Gm. (9½ ounces) and between 13 and 21 years 350 Gm. (12 ounces). Children up to 3 years of age get 50 Gm. (1⅞ ounces) of rice a week and a sugar ration of 250 Gm. (8¾ ounces) instead of 125 Gm. (4 ounces) a week. The daily milk ration amounts to 0.5 liter (1 pint) for children between 3 and 7 years and 0.25 liter (½ pint) for children between 7 and 14 years of age. Besides, children up to 6 years are getting 125 Gm. (one-fourth pound) of chocolate a month, children and young people between 6 and 21 years 250 Gm. (one-half pound). Children and adolescents up to 21 do not get any coffee.

Inquiries into the physiologic value of this feeding have been made in comparison with the minimum necessary for the organism. Of importance is the research work of Mrs. Randoin, an authority on the physiology of nutrition and director of the Laboratoire de Physiologie de la nutrition at the Ecole des hautes études and of the Institut supérieur de l'alimentation. This work was done by means of exact laboratory experiments as to the value and the composition of different elements and with many inquiries carried on in the various districts of France. These institutes endeavor to do scientific research work and

also to solve purely practical problems regarding the substances indispensable for the body in order to supply them in the inadequate diet. The results of these inquiries have been discussed in meetings at the Académie de médecine, which has created a special Commission du rationnement alimentaire to study these problems thoroughly.

THE PHYSIOLOGIC VALUE OF THE FOOD RATION

The ration, which has remained stationary for a year in spite of slight alterations, has proved insufficient. The ration grants 1,225 calories a day, about half of the normal requirement of calories the average active person ought to have. Everybody must try to supply additional calories by providing himself with other food from the not rationed food market. In the daily ration are 220 Gm. of carbohydrate instead of the norm of 450 Gm. and 12 Gm. of animal albumin instead of the minimum of 30 Gm. That is why the ration does not contain a large part of the indispensable amino acids: leucine, isoleucine, phenylalanine, tryptophan, lysine and histidine, substances that the body cannot itself produce. These amino acids exist in the right ratio in animal and not in vegetable proteins; in the ration their proportion to one another is to the disadvantage of the animal proteins. Twenty-one Gm. of lipids of animal and vegetable origin is contained in the daily food ration, which is only about half of the strictly necessary daily minimum of 40 Gm. A great deal of the indispensable fatty acids is missing in the ration, for instance linoleic and linolenic acid, as well as a certain amount of vitamin E, which is derived from vegetable fats. At the same time much of the oil soluble vitamins A and D is missing, as well as a further amount of the vitamin E that animal lipids include, especially butter and other milk derivatives. Only a small quantity of them are contained in the ration. This feeding causes, on the other hand, an acid surplus in the body on account of the preponderance of acid residues over base residues.

CALCIUM DEFICIENCY IN THE DIET

At a meeting of the Académie de médecine Mrs. Randoin and Mr. Richet recently discussed calcium deficiency in the feeding of young people. A calcium shortage was found present before the war by means of research done by Mrs. Randoin in 1937 and 1938. In the meantime the deficiency has been increasing as the result of inadequate feeding.

Calcium Requirement and Deficiency

Age	Strictly Necessary Minimum of Calcium, Mg.	Supplied by Normal Food, Mg.	Contained in the Actual Food Ration, Mg.	Deficit, per Cent
5.....	210	693	1,044	..
6.....	217	716	444	38
8.....	277	914	444	51
10.....	276	910	444	51
12.....	335	1,105	444	60
14.....	410	1,350	141	89
18.....	550	1,875	141	92
20.....	450	1,485	141	90
30.....	450	1,485	141	90
Pregnant woman...	900	2,970	793	73.2

The rationed food is extremely poor in all minerals and especially in calcium. Two thirds of the necessary phosphorus, two thirds of the magnesium, three fourths of potassium and six sevenths of calcium are missing in the food of young people. The ration is supplying only 0.18 Gm. of calcium a day instead of 1.30 Gm., which an adolescent ought to get in his food. The phosphorus amounts to 0.52 Gm. a day instead of 1.45 Gm. The proportion of calcium to phosphorus amounts to 0.34 instead of the normal ratio of 0.9. The calcium phosphorus ratio for adults has also been displaced from the normal.

In their remarkable book *Carence calcique et régime alimentaire* (Calcium Deficiency and Alimentary Regimen), published this year, H. and M. Hinglais, directors of the laboratory at the Faculté de médecine, give figures comparing the calcium requirement of the organism, its amount in a well balanced ration and that in the actual food ration.

It has been stated that calcium taken in any form is assimilated by the body in the ratio of 50 per cent during the first

Vitamin D

Age	Strictly Necessary Minimum, International Units	Supplied by the Actual Food	Deficit, per Cent
1.....	400	25	93.7
5.....	400	25	93.7
6.....	400	7	98.2
13.....	400	7	98.2
14.....	400	9	97.7
18.....	400	9	95.5
30.....	200	9	97
Pregnant woman.....	800	24	97

year and 25 to 30 per cent at all other ages. This table shows that the actual food ration offers a sufficient amount of calcium only up to the age of 6 years.

To activate the calcium, a sufficient amount of vitamin D is needed. The authors give instructive figures comparing the vitamin D requirement of the body and its supply in actual food.

Children up to the age of 6, who alone have enough calcium in the actual food, are getting the same amount of vitamin D as the other ages, only in an extremely inconsiderable amount; as a result the sufficient amount of calcium cannot be assimilated in the body. The consequences of these deficiencies have already been observed. In the Société médicale des Hôpitaux de Paris Mrs. Pierre Bourgeois reports that tuberculosis among children is increasing. Mrs. Randoin proposed at a meeting of the Académie de médecine the medicinal administration of calcium in the best assimilable form of an organic salt in a daily dosage of 1 Gm. as well as the administration of the amount of vitamin D necessary for its assimilation. This proposal was approved by the Académie.

VITAMINS IN THE RATION

The actual food ration is extremely poor in vitamins. As Mrs. Randoin states, the ration contains only one third to one fourth of the amount included in normal feeding, and several diseases due to vitamin deficiency have already been observed. Polonowski reports cases of hemeralopia caused by the lack of vitamin A. At a meeting of the Société de pédiatrie Clement mentioned several cases of xerophthalmia among nurslings, also due to a vitamin A shortage. In the Société médico-psychologique, Sivadon and others referred to mass phenomena of diseases resembling beriberi among the insane due to vitamin B₁ deficiency. Cases of scurvy have also been observed. At the Société des médecins du nord, Demorez and Boulanger reported postoperative hemorrhages and hemorrhages of the gums due to vitamin C deficiency. Of utmost interest are the reports of Raoul Lecoq in the Académie de médecine on polyneuritic symptoms, which were first supposed to be an avitaminosis and proved later to be caused by an acidosis due to inadequate feeding in general. Professor Mouriquand calls these cases of vitamin deficiency reversible, and they can be cured by medical treatment. The symptoms of the so-called paravitaminosis producing irreversible changes are to be expected only after a prolonged lack of vitamins.

The Section d'alimentation of the Comité consultatif d'hygiène at Vichy determined to organize the systematic distribution of vitamins A, B and C. Professor Lesne, a specialist in vitamin research, believes that the effect of natural vitamins is superior

to that of the artificial ones. For instance, the treatment of scurvy by giving 50 cc. of lemon juice containing 25 mg. of ascorbic acid produces quicker results than 25 mg. of ascorbic acid administered as a medicament. The artificial vitamins, especially vitamin C, are quickly absorbed and also quickly secreted by the kidney. These vitamins have to be administered every day in order to be efficacious. Besides, there exists an antagonism among the different artificial vitamins. The body eliminates, for instance, vitamin C if vitamin A or D is administered simultaneously. Professor Lesne said at a meeting of the Académie de médecine that if good results have been realized with the administration of artificial vitamins "they are not able to mend the deficiency due to inadequate food."

MEXICO CITY

(From Our Regular Correspondent)

Jan. 21, 1942.

Population Problems in Mexico

The Bureau of Statistics and Economical Studies of the Central Department in the Federal District has collected the following data: According to the census of March 6, 1940 the Federal District, including Mexico City, has a population of 1,749,916 inhabitants, twice the figure given in the 1921 census and 37.8 per cent higher than in 1930, the result, undoubtedly, of immigration from the rural zones, especially the southern states. Mexico City in population has the seventeenth place in the world and the seventh on the American continent. The mean population in the city of Mexico is 10,951 inhabitants per square kilometer. The northeastern quarters have a human density of 27,927 per square kilometer and in towns and villages surrounding the city, which form the Federal District, the mean population is only 233 inhabitants per square kilometer. This zone contains 366,006 families with an average of 4.8 members per family, against 5.16 shown in the census of 1930. During the last decade 1,478,405 children were born in the Federal District and only 971,800 were alive on the day of the census, which means that one child out of three dies before reaching boyhood. The highest infant and child mortality is registered among the people living in the poorest quarters of the city or else in the suburbs in which sanitation is faulty. In the Federal District 98 per cent of the inhabitants speak Spanish, 6 per cent speak other languages besides and only 2 per cent do not speak Spanish but foreign languages. Only about 4 per cent live in houses of their own. All wear shoes with the exception of some natives and foreigners, who wear "huaraches" (sandals). Marriages increased, but divorces were three times what they were ten years ago.

Malaria in Mexico

For a long time, malaria has been one of the greatest public health problems in Mexico, principally in the tropical rural zones and along the coasts. Few special studies have been carried on to determine its prevalence, the mass immunity and resistance of individuals and the bionomics of the species of anopheles present in the different malarial areas. The annual mortality rates for the three principal causes of death for 1922 and 1938 in Mexico were:

	Average Number of Deaths		Rate per 100,000	
	1922	1938	1922	1938
Diarrheas and enteritis.	25,765	82,772	178.37	424.93
Pneumonias.....	23,744	62,376	225.61	320.23
Malaria.....	25,035	21,760	173.21	127.11

No reliable figures are available regarding morbidity, although malaria is one of the heaviest burdens supported by the Mexican people. The Bureau of Biostatistics of the Federal Department of Health states that there are more than 5 million patients

every year. According to the economic capacity of the country and pursuant to the ordinance of Aug. 29, 1938 the Federal Department of Health has been working on a program based on three fundamental points: sanitation, education of the public and curative and preventive treatment of those living in heavily infested areas, besides other secondary measures. In accordance with the program, the sanitation of Acapulco Harbor, one of the most popular summer resorts in Mexico, the city and port of Mazatlán, Manzanillo Harbor on the Pacific Coast as well as some other cities, such as Guadalajara, in the rural zones in the South and Atlantic Coast, have been carried on successfully during last year. The planting of cinchona trees by the Federal Department of Health will be increased in special places chosen for that purpose in the state of Chiapas in the southwestern part of Mexico, in which twenty-four thousand cinchona trees have been planted, besides more planted in a zone of the state of Tamaulipas, by the department of agriculture. The free distribution of antimalarial medicines will continue and a new laboratory specially dedicated to the study of malaria in Huixtla, Chiapas, located in the heart of the tropical region, will be inaugurated this year. In the annual budget for 1942, besides the amount to be collected from the mosquito stamp, nearly a million pesos (about \$200,000) will be spent in sanitation of rural areas.

Registration and Certification of Drugs, Foods and Cosmetics

The official organ of the House of Representatives publishes the new amendments to the Food, Drugs and Cosmetics Act related to the requisites for registration, taxes and duties for certification of such products. According to the new enactments, a patent medicine is any drug, medicine or pharmaceutical formula with a special name or trademark consistent with the patent law. Patent food is any food or beverage with a trademark. In general the registration rules consider as a food "anything introduced in the digestive tract without therapeutic purpose." A cosmetic is any perfume, face powder, cream, paste or the like, including medical soaps, destined to the beautifying of a person. According to article 6 the new registration taxes for drugs and cosmetics with foreign trademarks are 200 pesos, for drugs and cosmetics with domestic trademarks 20 pesos, for foods with foreign trademarks 50 pesos and for foods with domestic trademarks 20 pesos (the peso is equivalent to about 20 cents). Besides these registration taxes, all units or pieces of a patent medicine, drug, food or cosmetic should be certified by a stamp adhered to it and according to article 12 only a product accepted by the Food and Drug Committee of the Federal Department of Health can bear such a stamp and be put on sale. An official list of accepted products will be published periodically, and all products on sale without fulfilling all requirements will be confiscated and the firms will be fined.

The Fifth National Dental Congress

The fifth National Dental Congress organized by the Mexican Dental Federation affiliated with the International Federation of Dentists was inaugurated by Dr. Víctor Fernández Manero, chief of the Federal Department of Health, on January 12 at the general session held at the Beaux Arts Palace in Mexico City. At the speakers' table, besides Dr. Fernández Manero, who represented the president of the Republic, were Dr. E. G. Loogan, president of the International Dental Federation, Dr. Gustavo Baz, secretary of public welfare, Dr. José J. Rojo, president of the Mexican Dental Federation, Dr. P. Ventruella from Guatemala and other representatives from Central and South American countries. Dr. Gustavo Baz, secretary of public welfare, announced that in accordance with President Camacho's orders the National Dental Institute will be established during the present year. The congress, which was organized under the auspices of the National University, the Federal Department of Health and the Federal District Central Depart-

ment had a twofold purpose: to aid the progress of dentistry and strengthen the relationship between dentists in American countries. The transactions during the week consisted of scientific reports, papers and demonstrations, information to the public regarding dental and oral hygiene and exhibitions both commercial and scientific. All sessions were held at the National School of Dentistry. Three important reports were presented, on dentistry in relation to general diseases, dental ethics and modern trends in some dental problems. The closing general session was held on Saturday evening January 10. The officers of the old governing council were reelected for the new term.

AUSTRALIA

(From Our Regular Correspondent)

Nov. 15, 1941.

Social Security Revived in Australia

Following the defeat of the national government in Australia and the subsequent formation of a labor ministry, the question of social security and health insurance has again been brought up. Australia's new prime minister (Mr. Curtin) has stated that the newly formed labor government does not intend to overlook the fact that the establishment of a health insurance scheme has always been one of its major objectives. Meanwhile a general medical service for all Australians whose income does not exceed £416 a year has been approved as a policy by the federal council of the British Medical Association.

The plan presupposes the establishment of a national health insurance scheme to be administered by a statutory board of management. Main principles of the scheme are:

1. The system of medical service to be directed to the achievement of positive health and prevention of disease as much as to the relief of sickness.
2. Provision of the services of a general practitioner or a family doctor of his own choice for every individual.
3. Consultant, specialist, laboratory and all necessary auxiliary services with institutional provision when required to be available for the individual patient. Normally this would be done through the family doctor.
4. The several parts of the complete medical services to be closely coordinated and developed by applying a planned national health policy.

The plan was adopted at a recent meeting of the council.

Wireless Transmitting Apparatus (Possession) Order

To avoid the possibility of diathermy and other high frequency electrical apparatus causing interference to defense and other essential radio services, and to minimize the possibility of such apparatus being put to improper use, an order has been made under the national security regulations, which requires that no person, association, company, hospital, clinic or institution shall possess or operate the following types of apparatus without a license, if such apparatus develops power exceeding 10 watts at frequency exceeding 10,000 cycles per second: (a) Diathermy or other electromedical apparatus in which valves or spark coils are used, not including normal modern types of violet ray, ultraviolet ray, infra-red ray or x-ray apparatus or medical shocking coils. (b) High frequency furnaces. (c) Eddy current heating apparatus. (d) High frequency testing oscillators.

Before a license to operate any of this equipment is issued, the apparatus, or the room or premises in which the apparatus is installed, must be screened or otherwise treated so that interference will not be caused to authorized radio services. In the United Kingdom the equivalent regulation forbids absolutely the possession of diathermy apparatus by any private individual and even by private hospitals and clinics, but the Australian authorities consider that the situation does not warrant such sweeping action in the commonwealth.

War and the Activities of the Council for Scientific and Industrial Research

On the outbreak of war the Council for Scientific and Industrial Research considered the steps which could be taken to reorientate its investigations so as to render assistance in as direct a way as possible to the war effort of the British commonwealth of nations. It was not easy to make an immediate change over, but as the national effort gained momentum it was possible to devote more attention to studies directly related to war requirements. These studies have covered questions such as what Australian materials can replace materials previously imported, how best Australian materials can be used in new industries, what can be done to reduce the difficulties caused by any particular damming up of Australian exports and what can be done to alleviate difficulties caused by the upset of normal conditions. The division of food preservation and transport is working on the drying of various foodstuffs with a view to the export in that condition and a consequent saving of freight space. Particular attention is being given to eggs. The fisheries division is giving attention to the production of fish oils rich in vitamins and needed to replace cod liver oil, which it is no longer possible to obtain from Europe. Potash (for the dipping of dried vine fruits) is now difficult to obtain, but it has been shown that the shortage can be overcome by extracting potash from vine prunings. The division of plant industry is investigating the production of medicinal plants. At the request of the medical equipment control committee an investigation has been undertaken of the problem of growing certain essential drug plants. The chief plants concerned are *Atropa belladonna*, *Artemisia maritima*, *Cephaelis ipecacuanha*, *Claviceps purpurea*, *Cinchona*, *Datura*, *Duboisia*, *Digitalis*, *Dryopteris Filix-mas*, *Ephedra*, *Papaver somniferum* and *Strychnos nux-vomica*.

Australian-American Association

The movement toward forming the Australian-American Association was initiated by a body of Australian citizens in the belief that the ideals and outlook on life of the peoples of America and Australia are so closely allied that it needs only a thorough knowledge of each other to achieve mutual respect and full understanding of each other's point of view; that the future peace, freedom and prosperity of the Pacific largely depend on the achievement of such an understanding and friendly regard between these two peoples, and that the close friendship of the vigorous democracies of the New World may well be the decisive factor in reestablishing the principles of freedom in a threatened civilization.

The Australian-American Association has as its objects (1) to extend fellowship and hospitality to American visitors to our shores and to afford them facilities for obtaining an immediate knowledge of Australia, (2) to contribute to a better understanding by the Australian public of American affairs and point of view and (3) to attract in active membership citizens of both countries who will contribute to the furtherance of practical cooperation and mutual understanding.

Marriages

EDWARD BALDWIN SELF, South Orange, N. J., to Miss Beatrice Marie Bellinger of Woodside, L. I., N. Y., Nov. 6, 1941.

WILBUR FISKE LEIGHTON, Portland, Maine, to Miss Wilhelmína Gerard Herrmann of Jersey City, N. J., Oct. 31, 1941.

RICHARD DUPUY NIERLING, Jamestown, N. D., to Miss Grace Jessie Erickson at Grand Forks, Dec. 27, 1941.

FUNSTON J. ECKDALL, Emporia, Kan., to Miss Clara R. Maurycy of Schenectady, N. Y., Dec. 10, 1941.

PAUL H. BRAUER to Miss Arlette Philippous, both of New York, June 14, 1941.

Deaths

Soma Weiss ☉ Boston; Hersey professor of theory and practice of physic at the Harvard Medical School and the graduate school, died, January 31, aged 43. Dr. Weiss was born in Besterce, Hungary, Jan. 27, 1899. He received an A.B. from Columbia University, New York, in 1921 and graduated from Cornell University Medical College, New York, in 1923. He served as demonstrator and research fellow in physiology and biochemistry at the Royal Hungarian University in Budapest between 1917 and 1920, when he became assistant in pharmacology at Cornell and served in that capacity until 1923. He joined the faculty of Harvard Medical School in 1925 as assistant in medicine, was instructor in medicine from 1927 to 1929, assistant professor from 1929 to 1932 and associate professor from 1932 to 1939. Dr. Weiss was a member of the American Society for Clinical Investigation, the American Academy of Arts and Sciences, the American Heart Association and the Association of American Physicians and numerous others and fellow of the American College of Physicians. He was the second to hold the post of physician in chief of the Peter Bent Brigham Hospital. He was formerly associate physician and assistant director of the Thorndike Memorial Laboratory of the Boston City Hospital, director of the Second and Fourth Harvard Medical Services at the City Hospital and later chief of the Fourth Service. Dr. Weiss was a member of the Council on Pharmacy and Chemistry of the American Medical Association and a member of the United States Pharmacopeial Revision Committee. He was especially well known for his work on cardiovascular disease.

Charles Hatch Stoddard, Milwaukee; College of Physicians and Surgeons of Chicago, 1892; member of the House of Delegates of the American Medical Association in 1916; member of the board of directors of the Wisconsin Anti-Tuberculosis Association from 1909 to 1911, vice president from 1925 to 1930, president, 1931-1932, and recording secretary from 1933 to 1941; in 1918 and in 1932 vice president of the Milwaukee Academy of Medicine; member of the first Wisconsin committee of the International Congress on Tuberculosis in 1908; in 1927 president of the Milwaukee County Medical Society; fellow of the American College of Physicians; was a major in the medical corps of the Wisconsin National Guard during the World War; in 1907 first medical director and superintendent of the Bluemond Sanatorium; on the staffs of the Columbia Hospital, Mount Sinai Hospital, St. Mary's Hospital, Milwaukee County Hospital and the Milwaukee Hospital; aged 72; died, Dec. 17, 1941, of chronic nephritis.

George Albert Smith, Wakefield, N. H.; Bellevue Hospital Medical College, New York, 1881; member of the Medical Society of the State of New York and of the American Psychiatric Association; was appointed assistant physician in 1882 at the city mental hospital located at Hart's Island, where he was superintendent from May 1, 1892 to Jan. 1, 1895, when he was transferred as superintendent to the New York City Farm for the Insane at Central Islip, which later became a unit of the Manhattan State Hospital and later a separate institution known as the Central Islip State Hospital, where he was superintendent and retired in December 1932 when he became superintendent emeritus; served for many years on the Governor's Lunacy Commission to examine before electrocution those convicted of murder; was at one time acting superintendent of the Pilgrim State Hospital, Brentwood, N. Y.; aged 83; died, January 6, in Garden City of acute coronary infarction.

Charles Manly Peters, Jersey City, N. J.; College of Physicians and Surgeons, Baltimore, 1913; also a dentist; consulting stomatologist from 1915 to 1922, attending oral surgeon from 1923 to 1939 and since 1940 consulting oral surgeon, Christ Hospital; chief oral surgeon, Jersey City Medical Center; chief maxillofacial surgeon, Margaret Hague Maternity Hospital; consulting oral surgeon, North Hudson Hospital, Weehawken, N. J., and St. Mary's Hospital, Hoboken; aged 62; died, Dec. 26, 1941.

Douglass William Montgomery ☉ San Francisco; College of Physicians and Surgeons, medical department of Columbia College, New York, 1882; member and in 1910 president of the American Dermatological Association; for many years professor of dermatology at the University of California Medical School; cofounder of the San Francisco Polyclinic and its first dermatologist; aged 82; died, Dec. 21, 1941, in Guayaquil, Ecuador, of coronary thrombosis.

S. Arthur Morris, New York; Columbia University College of Physicians and Surgeons, New York, 1918; member

of the Medical Society of the State of New York and of the American Society of Anesthetists, Inc.; past president of the New York Society of Anesthetists; on the staffs of the North Hudson Hospital, Weehawken, N. J.; Harlem Hospital, St. Elizabeth Hospital and the Lutheran Hospital; aged 51; died, January 5.

George Burton Stull, Harrisburg, Pa.; Medico-Chirurgical College of Philadelphia, 1906; member of the Medical Society of the State of Pennsylvania; past president of the Dauphin County Medical Society; was on the staffs of the Harrisburg Hospital and the Harrisburg State Hospital; served as company surgeon for the Pennsylvania Railroad; aged 63; died, Dec. 18, 1941, in Philadelphia of chronic lymphatic leukemia and streptococcal bacteremia following prostatectomy.

Walter Brown Orbin, Dormont, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; aged 63; died, Dec. 6, 1941, in the Presbyterian Hospital, Pittsburgh, of cerebral hemorrhage.

Thomas Madison Boyd ☉ Norman, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1917; served during the World War; formerly on the staff of the Central State Hospital; aged 47; died, Oct. 29, 1941, of pulmonary tuberculosis.

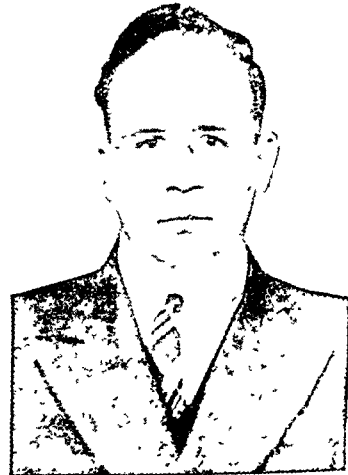
William Garrett Christoffersen, New York; Boston University School of Medicine, 1930; on the staff of the Veterans Administration Facility; aged 45; died, Oct. 25, 1941, of pneumonia.

Samuel Nason Newton, Versailles, Mo.; American Medical College, St. Louis, 1907; aged 66; died, Nov. 14, 1941.

DIED IN MILITARY SERVICE

Charles Joseph Young ☉ Cincinnati; University of Cincinnati College of Medicine, 1931; first lieutenant in the United States Army Medical Reserve Corps; aged 34; was killed, Dec. 16, 1941, in an airplane accident near Montgomery, Ala.

Benjamin Bennett Kysor Jr., Madrid, N. M.; University of Buffalo School of Medicine, 1937; first



BENJAMIN BENNETT KYSOR JR., M.D.

lieutenant in the medical reserve corps of the United States Army; aged 28; was killed in action recently at Corregidor Island, P. I.

Simm Hartt Moore, Houston, Texas; University of Texas School of Medicine, Galveston, 1907; member of the State Medical Association of Texas; served during the World War; was a lieutenant colonel in the National Guard, 111th medical regiment, 36th division, Camp Bowie, was serving at Camp Wolters where he died, Dec. 7, 1941, of coronary sclerosis, aged 55.

Correspondence

"ENDOCRINE TREATMENT OF CRYPTORCHISM"

To the Editor:—After reading the article on this subject by Thompson and Heckel (*THE JOURNAL*, Dec. 6, 1941, p. 1953) I must voice decidedly different opinions as to the proper treatment of youngsters with this condition.

The authors recommend the injection of chorionic gonadotropin from three to six times a week. This is continued from six to eight weeks on the average or until some growth in the genitals is produced. If under this treatment the testis or testes do not descend, immediate operation is advised. The authors feel a little uncertain how early in life this treatment should be instituted, but their observations suggest a very early age.

The authors admit that glandular therapy will not cause descent of a testis which will not descend spontaneously by puberty. This treatment, however, separates the cases that require operation; by means of glandular and operative treatment the testis is brought down into its normal position at an early age, which the authors believe is highly important. According to their experience a testis brought down into the scrotum by glandular or operative treatment is smaller than normal. They do not feel sure whether these testes are small because they have not descended normally or whether they have not descended because they were small. Because of the former possibility, they believe that the testis should be gotten down into the scrotum at as early an age as possible.

It would be unfortunate if the authors' recommendations were to be generally adopted, for this would entail a lot of needless glandular therapy and operations with useless expense and suffering. First, the great majority of undescended testes—and by this term I mean testes which cannot be palpated in the upper scrotum or in the inguinal canal but which lie within the abdominal cavity—descend spontaneously by the fifteenth year. In the small series reported by me (*Spontaneous Late Descent of the Testis*, *THE JOURNAL*, March 10, 1934, p. 759) eleven of the twelve testes eventually descended spontaneously. Johnson's report (*Cryptorchism*, *THE JOURNAL*, July 1, 1939, p. 25) of his experience in the examination of 31,609 boys confirmed my limited observations. Of the 544 cases encountered, 313 descended spontaneously during the limited period of observation. Some 154 boys were lost sight of and no follow-up examination was made on an additional 63. This was the first report I know of in which the natural course of unmolested undescended testes was followed in a large enough series to be convincing. Its perusal is recommended to those who question the frequency of spontaneous descent.

The testis that descends spontaneously but late is generally normal. This has been my experience, and Johnson reported that "spontaneous descent resulting in a normal testis as to size, consistency and position occurred in 300 instances." Presumably this was not the case in 13 cases. Another fact which I observed and which was confirmed by Johnson is that this spontaneous late descent occurs most frequently in the eleventh, twelfth, thirteenth and fourteenth years and an appreciable number in the fifteenth year. This fact should allay the urge that many seem unable to resist to institute active glandular or operative treatment at an early age.

Further, it has been shown that the undescended testis before puberty is indistinguishable microscopically from the normally descended one. Only occasionally is cryptorchism associated with evidence of glandular deficiency. Boys with one or both testes undescended are not in my experience "slightly frail and somewhat effeminate" in appearance. Either before or after puberty it would be impossible for any one to pick out of a

group of boys by their general appearance those whose only abnormality was an undescended testis or testes. In fact, the only boy in my group whose testis failed to descend eventually could lick any boy his age in the school. I doubt whether the idea that late descent of the testes is due to lack of hormone is tenable.

The question of the advisability of using glandular therapy before puberty in these cases deserves serious consideration. In my opinion one should think twice before undertaking any therapy that will produce enlargement of the genitals before puberty.

The authors were able to produce descent in only two of thirty-four intra-abdominal testes by glandular treatment. This to me makes it apparent that the response to glandular treatment does not designate those cases in which spontaneous descent would have occurred.

Briefly, it is my conviction that these youngsters with one or both testes undescended and no evidence of glandular disturbance should simply be observed until their fifteenth year. There can be no great objection to trying the effect of glandular therapy in the few remaining cases, although a certain number among the few remaining undescended testes will descend in the late teens and descend satisfactorily. Certainly operation has a limited field in the correction of uncomplicated cryptorchism.

CARL B. DRAKE, M.D., St. Paul.

NOTE.—The letter of Dr. Drake was sent to Dr. W. O. Thompson, who replies:

To the Editor:—We are still not convinced that Dr. Drake means the same thing we do by the term "undescended testis." The problem of diagnosis is important, and it is not always easy to distinguish true cryptorchism from pseudocryptorchism (migratory testis). In some instances of pseudocryptorchism the testis may retract into the abdomen, simulating intra-abdominal cryptorchism. In our experience migratory testes are frequently considered true undescended testes. At the onset of puberty these testes promptly take up a permanent location in the scrotum. Moreover, often after only a few doses of chorionic gonadotropin they will remain in the scrotum for a time and may become migratory again when the effect has worn off. It is because we have excluded migratory testes that our percentage of successful results with chorionic gonadotropin is so much lower than that reported by many other observers.

Dr. Drake states that the testes which he has observed that moved spontaneously into the scrotum at the age of 12 to 15 years were "generally normal" both in size and in microscopic appearance, whereas in our experience a true undescended testis is often smaller after it has been placed in the scrotum with glandular therapy or operative procedures than the testis which has been in the scrotum since birth. Migratory testes are often normal in size. These facts lead us to wonder whether Dr. Drake has failed to distinguish migratory testes from true undescended testes. It is difficult to see how the testes that Dr. Drake observed could have been normal unless they had been in the scrotum a considerable part of the time.

We can see no good reason to modify what we have said in our article under the subtitle "The Status of Glandular Therapy." In particular we should like to repeat the following arguments in its favor:

1. The testis can function normally only in the environment of the scrotum.
2. It is therefore logical to assume that the earlier it is brought into the scrotum the more likely it is to be normal.

WILLARD O. THOMPSON, M.D.

NORRIS J. HECKEL, M.D.

Chicago.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospi-
tals, 535 North Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners
in the basic sciences were published in THE JOURNAL, January 31, page
400.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various
centers, Feb. 9-11. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St.,
Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral. Part II.* Atlantic City,
June 6-7. Final date for filing application is March 7. Sec., Dr. Paul M.
Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* St. Paul, April, in
advance of the meeting of the American College of Physicians, and Phil-
adelphia, June, in advance of the meeting of the American Medical Asso-
ciation. Applications should be on file 6 weeks in advance of the date
of oral examination. *Written.* Oct. 19. Final date for filing application
is Sept. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Mad-
ison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: New York, June.
Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral. Part II.*
Groups A and B Atlantic City, May or June. Final date for filing ap-
plication is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, June 6 and
Philadelphia, June 8. Sec., Dr. John Green, 6830 Waterman Ave.,
St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral and Written. All*
Groups. Philadelphia, June, preceding the meeting of the American
Medical Association. Final date for filing application is March 1. Sec.,
Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, February 14.
Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* Boston,
May 15-16. Final date for filing application is March 1. Sec., Dr.
Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: *Oral. All Groups.* Atlantic City,
June 4. Final date for filing application is April 1. Sec., Dr. Byrl R.
Kirklin, 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written. Part I.* Various centers,
March 2. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Phila-
delphia.

Alabama Reciprocity Report

The Alabama State Board of Medical Examiners reports 6
physicians licensed to practice medicine by reciprocity from
Nov. 6 through Dec. 8, 1941. The following schools were
represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine.....	(1937)		Illinois
Louisiana State University School of Medicine.....	(1940)		Louisiana
Tulane University of Louisiana School of Medicine.....	(1939)		Louisiana
Johns Hopkins University School of Medicine.....	(1923)		Maryland
Washington University School of Medicine.....	(1939)		Missouri
Jefferson Medical College of Philadelphia.....	(1939)		Penna.

Arkansas Reciprocity Report

The Arkansas State Board of Medical Examiners reports
10 physicians licensed to practice medicine by reciprocity and
2 physicians so licensed on endorsement of credentials of the
National Board of Medical Examiners from July 7 through
Dec. 31, 1941. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....	(1940)		Missouri
University of Illinois College of Medicine.....	(1939)		Texas
Boston University School of Medicine.....	(1936)		New York
University of Oklahoma School of Medicine.....	(1935), (1939)		Oklahoma
University of Pennsylvania School of Medicine.....	(1932)		Penna.
Medical College of the State of South Carolina.....	(1940)		S. Carolina
Memphis Hospital Medical College.....	(1903)		Tennessee
University of Tennessee College of Medicine.....	(1914)		Tennessee
University of Wisconsin Medical School.....	(1928)		New York

School	LICENSED BY ENDORSEMENT	Year Grad.	Reciprocity with
Tulane University of Louisiana School of Medicine.....	(1940)		
Duke University School of Medicine.....	(1939)		

Maine November Report

The State of Maine Board of Registration of Medicine
reports the written examination for medical licensure held at
Portland, Nov. 12-13, 1941. The examination covered 10 sub-
jects and included 100 questions. An average of 75 per cent
was required to pass. Fifteen candidates were examined, 11
of whom passed and 4 failed. Five physicians were licensed
to practice medicine by reciprocity and 8 physicians so licensed
on endorsement of credentials of the National Board of Medi-
cal Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Georgetown University School of Medicine.....	(1933)		1
Harvard Medical School.....	(1938), (1939)		2
Columbia University College of Physicians and Sur- geons	(1940), (1941)		2
Duke University School of Medicine.....	(1939)		1
Jefferson Medical College of Philadelphia.....	(1941)		1
University of Toronto Faculty of Medicine.....	(1938)		1
University of Western Ontario Medical School.....	(1931)		1
McGill University Faculty of Medicine.....	(1932)		1
Magyar Királyi Pazmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest.....	(1932)		1

School	FAILED	Year Grad.	Number Failed
University of Montreal Faculty of Medicine.....	(1941)		1
Medizinische Fakultät der Universität Wien.....	(1935), (1936)		2
Universität Bern Medizinische Fakultät.....	(1937)		1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine....	(1929)		Dist. Colum.
Tufts College Medical School.....	(1939)		Michigan
University of Rochester School of Medicine and Den- tistry	(1934)		Maryland
McGill University Faculty of Medicine.....	(1936)		Minnesota
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....	(1935)		Maryland

School	LICENSED BY ENDORSEMENT	Year Grad.	Reciprocity with
Georgetown University School of Medicine.....	(1940)		
Boston University School of Medicine.....	(1931), (1938)		
Harvard Medical School.....	(1937)		
Tufts College Medical School.....	(1934), (1939)		
Ludwig-Maximilians-Universität Medizinische Fakul- tät, München	(1934)		
Uniwersytet Jozefa Pilsudskiego, Warszawa.....	(1936)		

North Carolina Reciprocity Report

The Board of Medical Examiners of the State of North
Carolina reports 16 physicians licensed to practice medicine by
reciprocity and 7 physicians so licensed on endorsement of cre-
dentials of the National Board of Medical Examiners on Dec.
10, 1941. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine....	(1929)		Dist. Colum.
(1933) Virginia			
University of Illinois College of Medicine.....	(1933)		Illinois
State University of Iowa College of Medicine.....	(1937)		Iowa
Tufts College Medical School.....	(1934)		Maine
Wayne University College of Medicine.....	(1930)		Michigan
Washington University School of Medicine.....	(1940)		Missouri
Cornell University Medical College.....	(1937)		Virginia
Woman's Medical College of Pennsylvania.....	(1934)		Penna.
Medical College of the State of South Carolina.....	(1925)		S. Carolina
(1938) Dist. Colum.			
University of Tennessee College of Medicine.....	(1934)		Tennessee
Medical College of Virginia.....	(1916), (1941)		Virginia
University of Virginia Dept. of Medicine.....	(1929), (1932)		Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Reciprocity with
College of Medical Evangelists.....	(1940)		
Yale University School of Medicine.....	(1935)		
Duke University School of Medicine.....	(1935), (1937), (1938), (1939)		
University of Pennsylvania School of Medicine.....	(1938)		

Colorado Endorsement Report

The Colorado State Board of Medical Examiners reports 5
physicians licensed to practice medicine by endorsement on
January 6. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College.....	(1938)		Nebraska
University of Chicago, The School of Medicine.....	(1939)		N. B. M. Ex.
State University of Iowa College of Medicine.....	(1940)		N. B. M. Ex.
Johns Hopkins University School of Medicine.....	(1940)		Maryland
University of Nebraska College of Medicine.....	(1925)		Nebraska

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Use by Unlicensed Naprapath of Healing Art Title or Abbreviation.—An information was filed in the county court, Cook County, Ill., charging DeYoung, an unlicensed naprapath, with various violations of the Illinois medical practice act. The first count of the information charged that DeYoung did unlawfully diagnose an ailment or supposed ailment of a named person. The second count charged that he unlawfully treated the supposed asthma of the person referred to in the first count by manually "applying pressure and manipulating the back, side, vertebra and neck of the said person." The third count charged that he unlawfully suggested and recommended the manipulations referred to with the intent of receiving a fee therefor. The fourth count alleged that he unlawfully attached the title Doctor, Physician, Surgeon, M.D. or some other word or abbreviation to his name indicative that he was engaged in the treatment of human ailments as a business. The fifth and final count charged that DeYoung did unlawfully maintain an office for the treatment of human ailments. At the trial the patient referred to in the information testified that she went to DeYoung's home, on the porch of which was a sign "Dr. Joseph DeYoung, Naprapath." She consulted the defendant relative to some difficulty which she informed him she was having in breathing and told him that she suspected it was asthma or hay fever. DeYoung examined the patient in a room of his home which he used as an office. He pressed his fingers along her spine and told her that she did not have "much asthma" and gave her a massage treatment. The patient paid him \$5 for "half a course of naprapathic treatments" and he gave her a receipt signed "Joseph DeYoung, D.N." Before she left DeYoung's office and home he gave her three pamphlets, which were subsequently introduced in evidence at the trial. One pamphlet was entitled "Bulletin of the American Naprapathic Association, Volume XII, Burlington, Iowa, September, 1936, Number 11" and contained articles by various persons as to the efficacy of naprapathic treatments for numerous conditions. At the top of the first page was stamped "Dr. Joseph DeYoung, Thornton, Ill." Another pamphlet was entitled "The Business of Living" and advocated naprapathic treatments for the cure of many different human ailments. It was stated on the fourth page of this pamphlet that "Naprapathy is a scientific method of treating diseases both chronic and acute without drugs or surgery. Diseases and ailments which are regarded as incurable are cured by this wonderful treatment." On the last page of this pamphlet there was written in ink, "Dr. DeYoung, Thornton, Illinois." The other pamphlet was entitled "A Personal Message" and consisted of questions and answers about naprapathy. The second question in the pamphlet was "What is it?" and the answer, "Naprapathy is a system of accurately charted manipulative treatment for the cure of human ailments." On the next to the last page of this pamphlet it was represented that a long list of human diseases had been successfully treated by naprapathy. On the last page there was printed in heavy type, "Dr. Joseph DeYoung, Naprapathic Physician, Thornton, Ill." The second count of the indictment was quashed and the jury returned a verdict of not guilty as to the first, third and fifth count but found DeYoung guilty on the fourth count. Judgment was entered on the verdict and the defendant appealed to higher courts, the matter eventually reaching the Supreme Court of Illinois.

DeYoung contended that the fourth count of the information on which he was convicted should have been quashed because it did not allege that he was in fact engaged in the treatment of human ailments as a business. In answering this, the Supreme Court quoted from section 24 of the Illinois medical practice act reading, in part as follows:

If any person [1] shall hold himself out to the public as being engaged in the diagnosis or treatment of ailments of human beings, or [2] shall suggest, recommend or prescribe any form of treatment for the palliation, relief or cure of any physical or mental ailment of any person with the intention of receiving therefor either directly or indirectly any fee gift

or compensation whatsoever, or [3] shall diagnose or attempt to diagnose, operate upon, profess to heal, prescribe for, or otherwise treat any ailment, or supposed ailment of another, or [4] shall maintain an office for examination or treatment of persons afflicted, or alleged or supposed to be afflicted, by any ailment, or [5] shall attach the title Doctor, Physician, Surgeon, M.D., or any other word or abbreviation to his name, indicative that he is engaged in the treatment of human ailments as a business, and shall not then possess in full force and virtue a valid license issued by the authority of this State to practice the treatment of human ailments in any manner, he shall be guilty of a misdemeanor.

It will be noted, said the Supreme Court, that this section of the medical practice act defines five different crimes and the fourth count of the information on which DeYoung was convicted was based on the fifth crime stated in the section. The elements of that crime as defined in the statute are: (1) The person charged must have added the word "Doctor" or some other word or abbreviation to his name, (2) indicative that he was engaged in the treatment of human ailments as a business. This is not a declaration that the mere attaching of the title "Doctor" in itself conclusively establishes that the person charged was engaged in the treatment of human ailments as a business, but rather that the title or abbreviation must be attached and used in a manner and under such circumstances as to indicate that such person was so engaged. These are the only requirements of the fifth crime designated in the section quoted. In order to constitute the crime therein defined, it is not essential that the person charged actually be engaged in the treatment of human ailments as a business. Actual treatment without a license is a crime under a different clause of the section. There is no merit in DeYoung's contention that the fourth count is deficient because it does not contain an allegation that he was actually engaged in the treatment of human ailments as a business. Likewise there is no merit in his argument that the fourth count insufficiently set forth the acts charged to be a violation of the statute. That count charged the defendant, in the words of the statute, with violating it.

DeYoung next contended that the verdict of guilty as to the fourth count was repugnant to the verdicts of not guilty on the other counts. There is no merit in this contention, said the Supreme Court, for the specific charge made against DeYoung in the fourth count was separate and distinct from the charges made in the other counts.

The next question presented to the Court was whether or not the evidence showed beyond a reasonable doubt that DeYoung attached the titles "Dr." and "Physician" to his name in such a manner as to indicate that he was engaged in the treatment of human ailments as a business. Several of the witnesses called by the defendant, said the Supreme Court, testified that naprapathy is merely massage of a particular type and that human diseases cannot be cured by this treatment. DeYoung testified that the title "Doctor" has many different meanings and may be used outside the field of medicine and that he had had the degree of "Doctor of Naprapathy" conferred on him. None of this testimony, continued the Court, tended to prove or disprove the allegations of the fourth count that the defendant attached the title "Dr." to his name indicative that he was engaged in the treatment of human ailments as a business. On two of the three pamphlets which were given to the patient who testified in this case either the defendant or some one in his household printed or wrote "Dr. DeYoung" without any qualification which would have shown that he was not a regular and licensed medical practitioner. On the third pamphlet, the name "Dr. DeYoung" was followed by the words "Naprapathic Physician." There was testimony which would warrant the jury's belief that the defendant gave these pamphlets to the witness even though he denied such a gift. In each of these pamphlets, representations were made that human diseases have been successfully treated and cured by naprapathic treatments. While DeYoung was not the author of these pamphlets, by attaching to his name as printed thereon the title "Dr." and by delivering them to the patient witness, he adopted the statements contained therein as his own and indicated that he was engaged in the treatment of human ailments as a business. In the opinion of the Court, therefore, the offense charged in the fourth count was proved beyond a reasonable doubt.

The judgment of conviction was accordingly affirmed.—*People v. DeYoung*, 38 N. E. (2d) 22 (Ill., 1941).

Dental Practice Acts: Suspension of License for Advertising Statements of a Character Tending to Deceive or Mislead the Public.—The California dental practice act authorizes the board of dental examiners to revoke or suspend the license of a dentist guilty of unprofessional conduct, which, among other things, the act defines as "The making use of any advertising statements of a character tending to deceive or mislead the public." On a charge that Smulson had so advertised, the board, after notice and hearing, suspended for two years his license to practice in California. He sought a writ of mandate from the superior court, Los Angeles County, to compel the board to vacate its order suspending his license. From a judgment for the board, Smulson appealed to the district court of appeals, second district, division 1, California.

Smulson contended that the provision of the dental practice act under which his license was suspended is too vague and uncertain to enable a dentist to know what is forbidden and is therefore void. The act, said the court, here in question provides suspension or revocation of the license of a dentist making use of any advertising statements of a character "tending to deceive or mislead the public." The words of this provision are well known and understood in both popular and legal language. This description of the forbidden practices is no more uncertain than many other statutory provisions which have been held to be valid exercises of legislative power. It is not required that even a penal statute, to be valid, have that degree of exactness which inheres in a mathematical theorem. The law is full of instances in which a man's fate depends on his estimating rightly, that is, as the jury subsequently estimates it, some matter of degree. A case very similar to the present one, said the court, is *Glass v. Board of Medical Examiners*, 50 Cal. App. 389, 195 P. 73, which upheld a provision of the medical practice act defining unprofessional conduct for which a license could be revoked as including "all advertising of medical business which is intended or has a tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful or injurious to public morals or safety." The court in the *Glass* case said:

It would not be possible to frame a definition of unprofessional advertising which would anticipate in terms every form of advertisement which unscrupulous practitioners might thereafter devise. This being so, it cannot reasonably be held necessary to the validity of the statute that it go further than to state a reasonably definite rule under which all such specific acts might be included. This we think has been done in the terms of the statute so far as the same are now presented for consideration.

The charges on which the board proceeded in the proceedings against Smulson alleged that he "knowingly and intentionally caused to be printed, circulated and distributed to the general public . . . a certain hand bill . . . wherein and whereby the said Harry Smulson did advertise as a dentist and did make use of advertising statements of a character tending to deceive or mislead the public, a photostatic copy of which advertisement is hereto attached." Smulson contended apparently that the charges were insufficient but for just what reasons the reported decision does not make clear. In proceedings, said the appellate court, before a licensing board for revocation or suspension of a professional license on account of unprofessional conduct the accusation or complaint is sufficient if expressed in the language of the statute. This rule is subject to the qualification that the language of the statute must be sufficiently explicit to advise a person charged thereunder of the particular kind of unprofessional conduct which it is proposed to prove against him. Here the language of the statute used in the accusation would of itself be sufficient to comply with the rule, as so qualified, but the accusation goes further and sets forth a copy of the advertisement used and characterizes it in the statutory language.

In describing the advertisement attached to the complaint, the appellate court said: "As is usual in such cases it is grossly and fulsomely laudatory of [Smulson's] mode of operations and of the quality of the work done by him." Referring to dental plates, the attached advertisement said: "They are made after Dr. Smulson personally takes the impressions and makes a special study of your case. What I have done for thousands of other folks I am confident I can do for you." The statements just quoted, said the appellate court, read with the other matters commendatory of Smulson's work in the advertisement,

convey the idea that it is too important a part of the practice to be left to the "skilled work of only licensed dentists" in Smulson's office, and so it is done by Smulson personally. A witness who testified at the hearing before the board stated that she had gone to Smulson's office for plates in response to this particular advertisement and that the impressions of her mouth were not taken by Smulson but by some dentist in his employ. Obviously, said the court, the declaration in the handbill or advertisement did not represent a uniform custom of his business and tended to mislead the public in a matter which in the handbill he tried to make it think was important. Smulson endeavored escape from this conclusion by urging that the word "take" in the statement quoted did not refer to the actual making of the impressions but meant that after they are made Smulson "takes" them in his hands for the purpose of studying them. To any one who has heard any discussion of such matters, continued the court, this is plainly a forced and unusual construction of the language used. Even if it be accepted as a possible construction, it remains true that the construction we have given the word "take" in this connection, as referring to the actual work of making the impressions, is also possible and much more in consonance with ordinary usage.

The handbill or advertisement also contained these statements: "You can have your plates and make your first payment 30 days after they are completed by using my no money down easy payment plan"; "Don't Pay Me One Penny Until You Have Worn My Dental Plates for 30 Days." These statements, said the court, were also misleading. According to Smulson's testimony, the easy payment plan referred to consisted in taking a note, which he required the patient to sign, and selling it to a finance company, first submitting the application for credit to that company before doing the work. The date of the first payment was put in the note when the patient made a definite appointment for the work and was fixed so as to be thirty days after the then estimated time for completion. One witness before the board testified that the time for her first payment on the note arrived and she was sued on the note before she got one of her plates fixed up so that she could wear it. In Smulson's actual practice, he fixed the date of the first payment before he even began to work on the plates; at that time he could not know when he could complete the plates and have them in wearable condition, for sometimes many fittings with accompanying delay would be necessary for that purpose. But once the date of payment was fixed and the note transferred to a finance company, it was out of his power to extend the time to conform to his statements in the handbill.

The order of the board of dental examiners suspending Smulson's license was, in effect, affirmed.—*Smulson v. Board of Dental Examiners*, 118 P. (2d) 483 (Calif., 1941).

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17.

American Association of Anatomists, New York, April 1-3. Dr. Eliot R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Pathologists and Bacteriologists, St. Louis, April 2-3. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American Orthopaedic Association, Detroit, Feb. 19-21. Dr. Norville C. LaMar, 149 East 73d St., New York, Secretary.

American Physiological Society, Boston, March 30-April 4. Dr. Carl J. Wiggers, 2109 Adelbert Rd., Cleveland, Secretary.

American Society for Experimental Pathology, Boston, April 1-3. Dr. Harry P. Smith, Medical Laboratory Bldg., Iowa City, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Boston, March . . . Secretary, University of . . .

Minnesota Medical . . . Secretary, . . .

American Society . . . 12. Dr. Paul M. . . Secretary, . . .

Wood, Room 15C . . . Dr. George M. . . Secretary, . . .

Central Surgical . . . Secretary, . . .

Curtis, Ohio St . . . Secretary, . . .

Federation of American Societies for Experimental Biology, Boston, March 31-April 4. Dr. D. R. Hooker, 19 West Chase, St. Baltimore, Secretary.

Mid South Post Graduate Medical Assembly, Memphis, Tenn., Feb. 10-13. Dr. Arthur F. Cooper, 165 Madison Ave., Memphis, Tenn., Secretary.

Pacific Coast Surgical Association, San Francisco and Del Norte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.

Society of University Surgeons, Cincinnati, Feb. 12-14. Dr. Frank Glenn, 525 East 68th St., New York, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

American Journal of Public Health, New York 31:1121-1242 (Nov.) 1941

- The City Health Officer Looks at Public Health. J L Rice, New York.—p 1121.
- Protection of Children in Great Britain in War Time Martha M Eliot, Washington, D C—p 1128.
- Study of Home Accidents: Their Public Health Significance D B Armstrong and W G Cole, New York—p 1135.
- Adolescence and Public Health L K Frank, New York—p 1143.
- Population Variables and the Public Health Worker E L Koos, New York—p 1151.
- Plague Situation in Western United States R H Creel, San Francisco—p 1155.
- Problem of Insecticide Spray Residue. A J Cox, Sacramento, Calif—p 1163.
- Milk Borne Disease in Massachusetts, 1933-1940 R F Feemster, Boston—p 1169.
- Wartime Protection of Water Supplies R F Goudey, Los Angeles—p 1174.
- Facts and Fancies About Food Fats A J Carlson, Chicago—p 1181.
- Staphylococcus Enterotoxin: Improved Cat Test, Chemical and Immunologic Studies W M Hammon, Boston—p 1191.
- Studies in Epidemiology of Primary and Secondary Syphilis in New York City B Webster and E I. Shelley, New York—p 1199.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill. 46:605-764 (Nov.) 1941. Partial Index

- Value of Roentgen Ray in Diagnosis and Prognosis of Silicosis W. M. Doughty, Cincinnati—p 605.
- Linear Shadows in Lung (Interlobar Pleuritis, Atelectasis and Healed Infarction) F. Fleischner, A. O. Hampton and B. Castleman, Boston—p 610.
- Tunnel Chest Deformity and Its Recognition in Posteroanterior Roentgenograms of Thorax L. W. Paul and M. R. Richter, Madison, Wis.—p 619.
- Roentgenologic Study of Acute Infections in Respiratory Tract of Children J. S. Bouslog, Denver—p 622.
- Cineroentgenographic Diagnosis of Congenital and Acquired Heart Disease W. H. Stewart, C. W. Breimer and H. C. Maier, New York—p 636.
- Differential Diagnosis by Means of Intravenous Contrast Medium of Two Cases Simulating Aneurysm of Pulmonary Artery. S. A. Thompson, New York—p 646.
- Diverticula of Upper End of Stomach H. G. Reineke, Cincinnati—p 650.
- Nonspecific Bone Infection with Unusual or Obscure Features: Cases R. W. Lewis, New York—p 659.
- Roentgenologic Aspects of Subungual Glomus Tumor E. L. Rypins, Bloomington, Ill.—p 667.
- *Irradiation of Pituitary Gland in Posterior Lobe Hyperfunction Controlled by Biologic Tests E. P. Pendergrass, P. J. Hodess and J. Q. Griffith Jr., Philadelphia—p 673.
- Further Studies in Radium Treatment of Carcinoma of Uterine Fundus R. E. Fricke and H. H. Bowing, Rochester, Minn.—p 683.
- *Pneumoperitoneum as Aid in Pelvic Irradiation for Carcinoma of Cervix L. R. Sante, St. Louis—p 689.
- Interstitial Irradiation in Cancer of Uterine Cervix. J. R. Andrews, Cleveland—p 700.
- Classification of Cancer of Breast. S. G. Schenck, Brooklyn—p 709.
- Relative Biologic Effectiveness of Roentgen Rays and Neutrons on Regeneration of Forelimb of Amblystoma Larvae. E. C. Horn, Princeton, N. J.—p 727.

Irradiation of Pituitary Gland.—Pendergrass and his associates state that they have irradiated the pituitary gland of 31 patients with high blood pressure and of 10 with symptoms referable to menopause or menstruation. Blood studies of almost every patient for the antidiuretic substance prior to irradiation gave positive results. Approximately half the patients were clinically improved after irradiation of the hypophysis. In about two thirds of the patients irradiating the pituitary caused the positive results of antidiuretic tests to become negative. This suggests that there may exist in the region of the hypophyseal fossa a center or centers which partially control the antidiuretic substance of the blood. There is evidence that the pars neuralis (posterior lobe) liberates this substance. Other authors believe that the hypothalamus and

its supraoptic nuclei may do so. As far as roentgen therapy is concerned it is immaterial which area liberates the substance, as both are included in the field of irradiation. Study suggests that as the dose is increased to about 500 roentgens more positive results of antidiuretic tests become negative. In some persons the reaction may become negative with 80 roentgens delivered to the skin of the temple, whereas doses as high as 1,600 roentgens will have no effect on others. The beneficial effects were due at least in part to the effect of irradiation on the basophilic infiltration, as basophilic hypophyseal tumors are known to be radiosensitive. Much more investigation will be necessary before the value of the antidiuretic tests in the treatment of hypertension and in the retention of catamenial fluid can be evaluated.

Pneumoperitoneum as Aid in Pelvic Irradiation.—When treating carcinoma of the cervix Sante displaced the intestine from the field of radiation by inducing pneumoperitoneum. He points out that with the patient in the Trendelenburg position, the air rises into the pelvis, envelops the pelvic structures and displaces the intestine to the upper portion of the abdomen. Such removal of the underlying intestinal structures from the field of radiation aids compression of the lower part of the abdomen by the treatment cone. Compression alone increases the relative depth dose. After the intestinal tract has been emptied, pneumoperitoneum is induced by inflation with air to a point somewhat greater than that ordinarily used for diagnostic pneumoperitoneum. The patient should be kept on her back in bed for the first day or until she becomes accustomed to the presence of air in the abdomen. Air is used because large amounts of it usually take ten to fourteen days for complete absorption and often the entire course of roentgen therapy can be carried out with a single filling. At most, one refill about the seventh day may be necessary. Vaginal measurements seem to indicate that irradiation of the adnexal regions is more adequate when pneumoperitoneum is induced and when the Trendelenburg position is used than when the usual method of external irradiation is employed. Constitutional reactions, even with five daily external ports and one vaginal port of irradiation, did not develop when the intestine was properly displaced and excluded from the field of irradiation.

Anesthesiology, New York 2:611-732 (Nov.) 1941

- Cardiac Arrhythmias Under Cyclopropane Anesthesia. C. H. Thienes, P. O. Greeley and A. E. Guedel, Los Angeles—p 611.
- *Preliminary Clinical Report on New Carbon Dioxide Absorbent—Baralyme. M. G. Kilborn, West Orange, N. J.—p 621.
- Failure of Various Barbiturates to Prevent Cyclopropane Epinephrine Ventricular Tachycardia in Dog O. S. Orth, C. P. Wangeman and W. J. Meek, Madison, Wis.—p 628.
- Volatile Anesthetics: Ether, Chloroform, Ethyl Chloride and Divinyl Ether. H. B. Stewart, Tulsa, Okla.—p 635.
- Cyclopropane Anesthesia: Report of Results in 41,690 Administrations. I. B. Taylor, Philadelphia—p 641.
- Misuse of Epinephrine During Ether Anesthesia: Case Report. Mary Lou Byrd, New York—p 654.
- Sudden Death During Cyclopropane Ether Anesthesia Following Administration of Epinephrine: Case Report. M. H. Adelman, New York—p 657.
- Studies on Detoxication of Local Anesthetics: Comparison of Protective Effects of Sodium, Potassium and Calcium Salts H. Wastl, Philadelphia—p 661.
- Regional Anesthetic Procedures Around Vertebral Column. T. H. Seldon, Rochester, Minn.—p 669.

New Carbon Dioxide Absorbent.—Kilborn states that a new carbon dioxide absorbent, Baralyme, has been used for more than 1,000 patients given cyclopropane for surgical anesthesia. The results show that Baralyme has the following advantages over soda lime: Its efficiency is greater. The concentration of carbon dioxide is practically zero per cent up to the time of beginning exhaustion. No rest periods are needed. Its non-caustic quality removes the hazard of burns of the face and mucous membranes. The lower heat generation of Baralyme (110 F. as against 154 F. for soda lime) means less heat reflection back to the patient, especially in the to and fro method. A high concentration of carbon dioxide while Baralyme is used indicates exhaustion. No false temporary peak occurs, and the possibility of discarding the absorbent prematurely is precluded. The life of Baralyme per unit of volume averages 35 per cent longer than that of soda lime. Baralyme does not emit an unpleasant odor.

Annals of Internal Medicine, Lancaster, Pa.

15:783-952 (Nov.) 1941

- Fat Metabolism in Diabetes Mellitus W C Stadie, Philadelphia —p 783
- Studies of Factors Concerned in Edema Formation II Hydrostatic Pressure in Capillaries During Edema Formation in Right Heart Failure G Fahr and I Ershler, Binghamton, N Y —p 798
- Influenza F L Horsfall Jr., New York —p 811
- Principles Underlying Treatment of Cardiovascular Syphilis U J Wile, Ann Arbor, Mich —p 817
- *Hypertensive Heart Disease of Ten to Twenty Years' Duration Report of Eleven Cases N Flaxman, Chicago —p 821
- Morphine Abstinence Syndrome Its Nature and Treatment C K Hummelsbach, Lexington, Ky —p 829
- Local and Regional Injection Treatment of Low Back Pain and Sciatica E A Brav and H Sigmund, Philadelphia —p 840
- *Screening for Tuberculosis in the Civilian Population by Fluorography B H Douglas and C C Birkelo, Detroit —p 853
- Familial Acholuric Jaundice Associated with Bone Changes E L Cooper, Melbourne, Australia —p 858
- *Neurologic, Medical and Biochemical Signs and Symptoms Indicating Chronic Industrial Carbon Disulfide Absorption F H Lewey, Philadelphia —p 869
- Solubility of Acetylsulfapyridine and Acetylsulfathiazole in Urine A C Curtis and S S Sobin, Ann Arbor, Mich —p 884
- Arsenical Sensitivity and Vitamin C M H Delp and C J Weber, Kansas City, Kan —p 890

Hypertensive Heart Disease of Long Duration.—Flaxman presents histories of 11 patients who lived ten to twenty (average thirteen and seven-tenths) years after the first appearance of hypertensive heart disease at 56, 64, 52, 55, 35, 39, 47, 61, 50, 25 and 34 years, respectively. These patients escaped the usual unpredictable and uncontrollable causes of death (cerebral hemorrhage, coronary thrombosis and uremia) in hypertensive heart disease. Physical incapacity, the first factor, was not too great in the patients because their congestive heart failure was controlled by digitalis and none had the anginal syndrome. The character of the patient's work, the second factor, was important in only 2, a laborer and a salesman (of the other 8, 6 were housewives and 2 were unemployed). The salesman worked for ten years after his symptoms appeared but being his own employer he worked only enough to support himself. The laborer worked for fifteen of twenty years at a highly seasonal occupation, being employed probably not more than six months out of every year. Another consideration that entered into the reasons why these 2 patients continued to work was that they had no fear of heart disease as an incapacitating or a fatal ailment. The influence of disability insurance as an incapacitating factor need not be considered, as none of the patients had any policies. Disability in heart disease depends on the attitude of the patient in relation to his work and activity, and on the type and severity of his symptoms as related to necessary effort.

Screening for Tuberculosis in the Civilian Population.

—Douglas and Birkelo, from their experience with the 4 by 5 inch fluorograph of the chest of 15,220 persons, conclude that the method is reasonably accurate for detecting pulmonary tuberculosis. Surveys of community groups are definitely profitable as many previously unrecognized cases are discovered. They believe that a wider application of the method will aid in the control of tuberculosis. Of the 15,220 fluorographs, 8,322 were taken during the Brewster project, 4,727 were of pregnant women, 751 were of housekeepers and 1,420 were of young persons selected for the National Youth Administration. The fluorographs revealed a total of 163 cases of pulmonary tuberculosis: 121 in the first, 29 in the second, 4 in the third and 9 in the fourth group of persons examined. The tuberculosis was primarily active in 27, minimal in 45, moderately advanced in 42, far advanced in 32 and milary in 3, and in 14 there was pleurisy with effusion.

Carbon Disulfide Absorption.—Lewey applies the term "chronic carbon disulfide absorption" to the syndrome observed in 120 viscose rayon workers. All but 3 of the workers were working at the time of the examination and did not consider themselves ill although they admitted various complaints when specifically questioned. No one symptom or sign was characteristic of the absorption, but signs of peripheral and cranial nerve involvement were elicited in 76 per cent, psychic symptoms (sleeplessness and bad dreams followed by fatigue, listlessness and loss of initiative) in 71 per cent, optic signs in 54 per cent, tremor in 33 per cent and pyramidal and extra-

pyramidal signs in 21 per cent. The total serum cholesterol was often definitely increased and the esters were simultaneously decreased. The thiamine excretion tended to be low. The spinal fluid was normal. The hypothesis offered (supported by experiments on dogs) is that the mechanism of chronic carbon disulfide absorption is different from that of acute carbon disulfide intoxication. The first is attributed to thiamine deficiency, possibly by way of hepatic damage and by direct poisoning of the coenzymes of nerve metabolism and respiration, whereas the second is compared to the narcotic effect of other gaseous anesthetics. A diet rich in vitamin B in the cafeterias of plants using carbon disulfide is recommended.

Archives of Neurology and Psychiatry, Chicago

46:947-1122 (Dec.) 1941

- Innervation and "Tonus" of Striated Muscle in Man P T A Hoefler, New York —p 947
- Diagnosis and Management of Subarachnoid Hemorrhage I J Sinds, Brooklyn —p 973
- Sympathetic Nervous System Influence on Sensibility to Heat and Cold and to Certain Types of Pain O R Hyndman and J Wolkin, Iowa City —p 1006
- Regulation of Treatment of Epilepsy by Synchronized Recording of Respiration and Brain Waves R S Schwab, A Grunwald, Boston and W W Sargent, London, England —p 1017
- Injection of Procaine into Brain to Locate Speech Area in Left Handed Persons W J Gardner, Cleveland —p 1035
- Amyotrophic Lateral Sclerosis Origin and Extent of Upper Motor Neuron Lesion C Davison, New York —p 1039
- Ruptured Aneurysm of Left Anterior Cerebral Artery with Production of Ipsilateral Cerebral Signs M T Moore and A A Beckman, Philadelphia —p 1057
- *Vitamin E and Alpha Tocopherol Therapy of Neuromuscular and Muscular Disorders R N DeJong, Ann Arbor, Mich —p 1068
- New Approach in Induction of Infraorbital Nerve Block P G Skillern, South Bend, Ind —p 1076

Neuromuscular and Muscular Disorders.—DeJong has used alpha tocopherol and wheat germ oil in treating 19 patients with amyotrophic lateral sclerosis, 1 with amyotrophic lateral sclerosis associated with syphilis, 5 with progressive spinal muscular atrophy, 8 with pseudohypertrophic muscular dystrophy and 2 with recent extensive poliomyelitis. The only outstanding clinical changes in amyotrophic lateral sclerosis and progressive spinal muscular atrophy with progressive bulbar paralysis have been a slight decrease in the fibrillary tremors, a feeling of well-being, a slight gain in weight and in some patients a subjective temporary increase in muscular strength. Large doses of alpha tocopherol were of no benefit in far advanced muscular dystrophy. There was no definite acceleration of improvement in poliomyelitis and no regeneration of atrophic muscles. Amyotrophic lateral sclerosis, progressive spinal muscular atrophy and progressive bulbar paralysis are degenerative diseases, and the atrophy in them is secondary to degeneration of the motor neurons. Therefore, regeneration of such muscles can follow only after the motor neurons are regenerated.

Archives of Pathology, Chicago

32:889-1060 (Dec.) 1941

- *Influence of Sodium Bicarbonate in Preventing Renal Lesions from Massive Doses of Sulfathiazole D R Climenko, O W Barlow, Rensselaer, N Y and A W Wright, Albany, N Y —p 889
- Osteosclerosis with Extensive Extramedullary Hemopoiesis and Leukemic Blood Reaction Case H E Jordan and J K Scott, Charlottesville, Va —p 895
- Development of Newborn Rat Ovaries Implanted in Anterior Chamber of Adult Rats Eyes, Adult Rats Used Normal Gonadectomized and Gonadectomized Treated with Chorionic Gonadotropin Lucia J Dunham, Ruth M Watts and I I Adair, Chicago —p 910
- *Poliomyelitis Induced by Lansing Strain of Virus Comparison of Lesions in Man and Monkeys J H Peer, Bethesda, Md —p 925
- Nerves of Adult Human Endometrium D Srite and F I Hirsch, Chicago —p 939
- Relation of Nephrosis and Other Diseases of Albino Rats to Age and to Modifications of Diet J A Saxton Jr., New York and Grace C Kimball, Ithaca, N Y —p 951
- Unilateral Renal Atrophy Associated with Hypertension A H Baggenstoß and N W Barker, Rochester, Minn —p 966
- The "Nerveless" Spinal Cord New Artifact H W Edmond Jr., Boston —p 983
- Myocarditis General Review with Analysis of 240 Cases O Squire, Chicago —p 1000

Lesions from Sulfathiazole.—According to Climenko and his co-workers, the daily medication with 1 Gm of sulfathiazole per kilogram of body weight caused the death of 4 of 5 adult Macacus monkeys during the course of medication which was

planned to be continued for twenty-eight days. The kidneys of the animals were edematous and moderately congested. On section, there were collections of crystalline material in the larger collecting tubules. Five other animals on the same dose level of sulfathiazole which were given also a gram for gram equivalent of sodium bicarbonate survived the twenty-eight days of medication without any untoward signs but moderate diarrhea. Two of these animals were killed on the twenty-ninth day, and no gross pathologic lesions were observed in the kidneys at necropsy. On section, the kidneys revealed slight acute congestion. The lumens of the convoluted tubules contained fluid and small accumulations of hyaline bodies, which in no way resembled the crystalline material seen in the animals given sulfathiazole alone. Foci of acute inflammation were not found. The clearcut differences between the two groups of animals cannot be accounted for in terms of difference in blood concentration, for the simultaneous administration of an alkali with sulfathiazole tends to improve the absorption of the drug from the gastrointestinal tract. The difference was evidently dependent on the hydrogen ion concentration of the urine. From previous experimental work, the authors know that the amount of sodium bicarbonate given 5 monkeys maintained the pH of the urine between 7.2 and 7.4. They suggest that in clinical practice a sufficient amount of sodium bicarbonate (or another suitable alkali) to maintain the urine on the neutral alkaline side should be used with sulfathiazole medication. Sulfathiazole and its conjugated derivative acetylsulfathiazole are many times more soluble in alkaline mediums than they are in acid mediums. Alkalinity of the urine prevents precipitation of the drug in the kidney, and thus the formation of local lesions is prevented.

Lansing Poliomyelitis.—Peers observed that the pathologic lesions in the brain of a youth of 19 in whom poliomyelitis due to the Lansing strain of the virus developed were essentially similar to those produced in monkeys by the virus isolated from the cerebral tissue of the youth. In spite of the supposedly low susceptibility of monkeys, the disease in them was anatomically more severe than in the human subject. The difference is really great, as all the animals were killed when paralysis was well established rather than after the disease had run its natural course. Since the intracerebral route of inoculation was used the severe lesions observed in the cortex and basal ganglions may be accounted for, but the extensive damage in the midbrain, cerebellum and medulla is not so easily explained. The pattern of the fully developed disease was essentially identical in man and in the monkey, though the route of inoculation was obviously different.

Bulletin of Johns Hopkins Hospital, Baltimore

69:397-492 (Nov.) 1941

- *Relation Between Concentration of Total Protein and of Globulin in Urine and Pathogenesis of Certain Renal Lesions in Bright's Disease. S. S. Blackman Jr., W. E. Goodwin and Mary V. Buell, with technical assistance of I. Vaffe and I. Miller, Baltimore.—p. 397.
- Myasthenia Gravis Complicated by Thyrotoxicosis: Creatine Studies: Case Report. G. W. Thorn and N. A. Tierney, Baltimore.—p. 469.
- Riboflavin Excretion Test as Measure of Riboflavin Deficiency in Man. V. A. Najjar and L. E. Holt Jr., Baltimore.—p. 476.
- Poison Ivy Dermatitis: I. Diagnostic Value of Patch Test Made with Ether Extract from Fresh Leaves and Stems of Poison Ivy Plant. E. L. Keeney, S. Sunday, L. N. Gay and K. Lynch, Baltimore.—p. 482.

Protein in Urine and Bright's Disease.—Blackman and his associates demonstrate a relation between the concentration of total protein and of globulin in the urine and the development of renal insufficiency in patients with Bright's disease. The determination of these concentrations in 42 patients indicated that in the patients who recovered, and in others during periods when renal function remained stationary, either the urine usually contained a small amount of protein (less than 0.5 Gm. per hundred grams of tissue) or if a larger proportion of protein was present there was only a small proportion of globulin (less than 35 per cent). The urine of patients in whom progressive renal failure developed more often contained a higher concentration of protein, of which a larger proportion was more often found to be globulin. In patients with the chronic form of the disease the more often both total protein and globulin were found in high concentration the more rapid was the progress of renal insufficiency.

Bulletin New York Academy of Medicine, New York

17:885-964 (Dec.) 1941

- Arteriosclerosis. T. Leary, Boston.—p. 887.
- Coronary Insufficiency: Observations on Diagnosis and Treatment. R. L. Levy, New York.—p. 898.
- Psychopathology of Psychopathic Personalities. G. S. Sprague, White Plains, N. Y.—p. 911.
- Influence of Climate and Geography on Health. C. A. Mills, Cincinnati.—p. 922.
- The Doctor in Court. P. J. McCook, New York.—p. 934.
- Founding of New York Laryngological Society, S. R. Kagan, Boston.—p. 946.

California and Western Medicine, San Francisco

55:225-278 (Nov.) 1941

- Administrative Psychiatry. A. J. Rosanoff, Sacramento.—p. 232.
- Tumors of Small Intestine. W. A. Morrison and D. Donath, Los Angeles.—p. 235.
- Estrogens: Their Use in Pediatrics. W. A. Reilly, San Francisco.—p. 237.
- Cancer of Prostate: Report of Thirty-Four Cases Seven and Eight Years After Treatment by Transurethral Resection. H. C. Bumpus Jr., Los Angeles.—p. 239.
- Powdery Mildews as Allergens. V. G. Alderson and Lucile R. Mason, Oakland.—p. 241.
- Common Duct Lesions: Their Surgical Management. L. A. Alesen, Los Angeles.—p. 243.
- *Syphilis: Five Day Treatment. N. N. Epstein, San Francisco.—p. 248.
- Recurrent Lymphangitis: Report of Case with Unusual Features. W. H. Goeckerman and L. F. X. Wilhelm, Los Angeles.—p. 251.

Five Day Treatment of Syphilis.—From an analysis of the published results of the five day intravenous drip method of treating early syphilis Epstein concludes that the method is entirely experimental and should be employed only in properly equipped and adequately staffed institutions. The method sterilizes the infectious lesions of early syphilis within twenty-four to forty-eight hours. Since only five days are required for the treatment all patients complete the course, in contrast to the 20 to 80 per cent of the patients treated by the usual methods who disappear from observation before therapy is completed. Satisfactory therapeutic results are as frequent as with other methods now in use. The technic accomplishes the primary aim of Ehrlich. The disadvantages of massive arsenotherapy in early syphilis are that: The treatment is still in the experimental stage. It is a hospital procedure and entails considerable expense. Sufficient time has not elapsed to evaluate its final results and the toxic end effects. Neosarsphenamine is too toxic to be practical, and the therapeutic results obtained with mapharsen have not been as satisfactory as those following the use of neosarsphenamine. The method has been employed only for male patients with early syphilis. No data are available on its value in female patients, for latent syphilis or for the numerous manifestations of late syphilis. The author disagrees with the statement that 2 instances of hemorrhagic encephalitis with 1 death among the 350 patients so treated is not excessive.

Georgia Medical Association Journal, Atlanta

30:457-492 (Nov.) 1941

- Clinical Studies on Secondary Anemia. A. H. Bunce, M. S. Dougherty Jr. and R. C. Davis, Atlanta.—p. 457.
- Air Embolism: Report of Two Cases. J. G. McDaniel, Atlanta.—p. 462.
- The So-Called Psychopathic Personality, with Special Emphasis on His Status in Selective Service. H. Cleckley, Augusta.—p. 466.
- Influenzal Meningitis: Report of Case. Helen W. Bellhouse, Thomasville.—p. 472.
- Blood Sedimentation Test. E. B. Agnor, Atlanta.—p. 474.
- Second X-Ray Study. M. Johnson, Atlanta.—p. 476.

Indiana State Medical Assn. Journal, Indianapolis

34:659-728 (Dec.) 1941

- Sulfonamide Compounds: Their Uses and Principles of Therapy. W. D. Province, New York.—p. 659.
- Massive Arsenotherapy in Syphilis. G. W. Bowman and F. G. Sheehan, Indianapolis.—p. 665.
- Organized Medicine and Tuberculosis. B. Goldberg, Chicago.—p. 669.
- Carcinoma of Prostate: New Methods of Management and Treatment. J. F. Balch, Indianapolis.—p. 672.
- Youth Health and Democracy. R. L. Sensenich, South Bend.—p. 674.
- Regional Heitis. H. C. Wallace, Crawfordsville.—p. 677.
- The Sexual Problem. M. Miller, Evansville.—p. 682.

Journal of Allergy, St. Louis

13:1-104 (Nov.) 1941

- Serologic Changes After Oral Ragweed Pollen Therapy in Children. S. J. Levin, Detroit, and Lillian Shulsky, Brooklyn.—p. 1.
- *Clinical Study of Histamine Azoprotein in Allergic Disease: Preliminary Report. J. M. Sheldon, N. Fell, J. H. Johnson and H. A. Howes, Ann Arbor, Mich.—p. 18.
- Critical Interpretation of Data on Incidence of Air-Borne Allergens. O. C. Durham, Chicago.—p. 31.
- Appearance of Pollen in Stool. E. L. MacQuiddy, Omaha.—p. 41.
- *Speed of Action of So-Called "Slow Epinephrine" (in Oil). L. C. Bacon, M. Stickler and R. W. Lamson, Los Angeles.—p. 48.
- Seasonal and Geographic Influences on Food Allergy. A. H. Rowe, Oakland, Calif.—p. 55.
- *Sensitivity of Man to Human Dander, with Particular Reference to Eczema (Allergic Dermatitis). S. F. Hampton, St. Louis, and R. A. Cooke, New York.—p. 63.
- Investigation of Question of Histamine Tolerance. J. A. Wells, J. S. Gray and C. A. Dragstedt, Chicago.—p. 77.
- Investigations on Presence of Forssman Antigen in Ragweed Pollen. C. Arbesman and E. Witebsky, Buffalo.—p. 85.
- Allergic Asthma and Rhinitis Due to Kamala Powder. M. London, Cleveland.—p. 92.

Allergic Disease.—Sheldon and his associates used histamine-azo-despecciated horse serum globulin for the treatment of 76 patients having atopic eczema, contact dermatitis, physical allergy, seasonal hay fever, perennial allergic rhinitis, gastrointestinal allergy or migraine headache. Many of the subjects manifested two or more types of allergic symptoms. The histamine azoprotein was tested intracutaneously in doses of 0.02 cc., and if a delayed reaction was absent the first treatment consisted of giving 0.05 cc. of undiluted histamine azoprotein subcutaneously in the deltoid area. Each subsequent dose, given twice a week, was increased by 0.5 cc. until symptomatic relief was obtained, or until a 1 cc. dose was reached. The initial dose for patients with delayed reactions was greatly reduced, and subsequent increases were guided by symptomatic improvement or the local reaction. No important local or systemic reactions followed the use of histamine azoprotein. The therapeutic results were sufficiently good to warrant further investigation. Best results were obtained by patients with physical allergy and cutaneous hypersensitivity. Two asthmatic patients, in whom asthma could be induced by exposure to cold, were relieved after three weeks of treatment. Asthma can no longer be produced in these 2 subjects. One patient, so sensitive to sunlight that she was confined to her home during daytime, is now able to do as she desires. In the few patients with contact dermatitis the cause was limited to but a few substances, but it appears that histamine azoprotein in conjunction with local treatment has more to offer than any other form of therapy. The patients with atopic eczema seemed to show definite benefit from histamine azoprotein therapy. Patients with seasonal ragweed hay fever were benefited as much as were similar control patients receiving specific ragweed desensitization in 1940. Histamine-azo-despecciated horse serum globulin is not offered as a panacea for allergic diseases.

Speed of Action of "Slow Epinephrine."—From their observations following one hundred and twenty injections of "slow epinephrine" (in oil) given to 36 ambulatory patients Bacon and his colleagues conclude that epinephrine in oil is not slow in its action, that the time between its administration and its pharmacologic effect compares favorably with equivalent doses of aqueous epinephrine and that contrary to the general belief small doses of epinephrine in oil frequently are effective. There was a response within fifteen minutes after nine of fourteen injections of 0.2 cc. of epinephrine in oil, within ten minutes after sixteen of twenty-six injections of 0.3 cc., within ten minutes after twenty-three of forty-four injections of 0.5 cc., within ten minutes in eleven (within fifteen minutes after twenty-three) of thirty-three injections of 0.6 to 0.8 cc. and within ten minutes after fifteen of twenty-five injections of 1 to 1.5 cc.

Sensitivity to Human Dander.—Hampton and Cooke present studies which suggest that sensitivity to human dander and eczema are related, that is, that the sensitivity is the result rather than the cause of eczema. They observed that the skin of 30 of 33 patients with eczema reacted to human dander extract and that the serum contained skin-sensitizing antibodies for it. Patients with eczema usually showed positive reactions, while

noneczematous persons usually showed negative reactions. The serum of only 10 of 90 patients with allergic diseases other than eczema contained skin-sensitizing antibodies. The serum of 10 normal, nonallergic patients did not contain skin-sensitizing antibodies. Only 3 of 75 patients with dermatoses other than eczema reacted significantly to human dander extract. As no relationship was found between sensitivity to human dander and that to other animal danders, it appears that general sensitivity to a component, such as keratin, common to all animal danders does not exist. If the sensitivity to human dander is based on extensive or prolonged inflammation of the skin only the patient with an allergic constitutional background is capable of producing the antibodies to human dander extract. Consequently, persons with eczema, being allergic, produce these antibodies, while those with psoriasis, seborrhea, tinea and exfoliative dermatitis, being nonallergic, do not. This view is supported by the fact that sensitivity to human dander was found in 1 patient with psoriasis and in 1 with tinea, both allergic but without eczema.

Journal of Lab. and Clinical Medicine, St. Louis

27:131-278 (Nov.) 1941. Partial Index

- *Toxic Reactions to Sulfapyridine: Acute Hemolytic Anemia, Leukemoid Reaction and Purpura in Three Separate Cases. A. A. Goldbloom, L. Greenwald and H. Reinstein, New York.—p. 139.
- Pleural Shock—a Reflex: Preliminary Report. W. L. Mersheimer and M. L. Colmer, New York.—p. 148.
- *Endocrine Aspects of Headaches. M. A. Goldzieher, New York.—p. 150.
- Cardiospasm: Observations on Use of Prostigmine: Clinical and Experimental Report. J. Meyer and H. Necheles, Chicago.—p. 162.
- Chronic, Atrophic Type of Brucellosis Arthritis. E. Goldfain, Oklahoma City.—p. 168.
- *Multiple Invasion of Blood Stream. A. Kanof and B. Kramer, Brooklyn.—p. 173.
- Multiple Serum Allergy in Atopic Individuals. A. I. Kleinman and H. Markow, Brooklyn.—p. 187.
- Prothrombin Studies Using Russell Viper Venom: II. Relation of Clotting Time to Prothrombin Concentration in Human Plasma. R. C. Page, E. J. de Beer and Martha L. Orr, New York.—p. 197.
- Significance of Xanthoprotein Reaction in Renal Insufficiency and Other Clinical Conditions. O. B. Ragins, Ida Kraus and G. C. Coe, Chicago.—p. 201.
- Effect of Anaphylactic Shock on Blood Potassium and Concentration. L. W. Kinsell, East Stroudsburg, Pa., and R. L. Zwemer, New York.—p. 206.

Toxic Reactions to Sulfapyridine.—Goldbloom and his associates observed unusual toxic reactions of the blood to sulfapyridine, varying grades of the leukemoid blood picture and associated secondary thrombocytopenic purpura in 3 patients with acute hemolytic anemia. In spite of these reactions, the patients recovered in a short time after transfusions of blood were given. Studies of the bone marrow showed erythroblastic hyperactivity in 2 patients. The authors believe that the decided hemolytic anemia may be evidence of a peripheral action, the leukocytosis an irritation of the myeloid element of the bone marrow and the thrombocytopenic purpura an allergic phenomenon. The reactions in their patients emphasize the importance of making frequent blood counts for any patient receiving sulfapyridine.

Endocrine Aspects of Headaches.—Goldzieher investigated the possible causal relationship between endocrinopathies and attendant metabolic disorders in 50 consecutive patients with severe headaches. All the patients, including the few whose headaches were not typically migrainous, had no organic or systemic disease as a possible cause of the headaches. Chemical studies, determination of the basal metabolism and observation of the daily urinary output show evidence of a general trend of retention of sodium chloride and water and frequent stigmas pointing to an endocrine background. These stigmas were a lowered basal metabolism, a decreased specific dynamic action of proteins, a relative lymphocytosis, a high value for uric acid, sodium and chloride in the blood, a low blood sugar level and abnormalities in the configuration of the sella turcica. Endocrine headaches, including migraine headaches, are explained as the result of increased intracranial pressure. They develop when an increased permeability of the capillaries permits an increased flow of water to, and subsequent retention in, the tissues in which abnormal quantities of sodium salts have been stored. The successful treatment of endocrine headaches consists of a high

protein diet with a restricted intake of salt, liquid and carbohydrate, of medication with ammonium or potassium salts and belladonna preparations, and of remedying the endocrine deficiency with thyroid and pituitary extracts.

Multiple Invasion of Blood Stream.—Kanof and Kramer found more than one organism in the blood stream of 24 children with bacteremia during hospitalization. These 24 patients represent 8 per cent of the 320 patients with bacteremia encountered during five years. There were 9 patients with true mixed septicemia, 5 with septicemia complicated by secondary bacteremia and 10 with spurious mixed septicemia, in which the second organism was a variant of the first or in which a casual invader appeared in the course of sepsis. It appears that once the resistance of the body to invasion of the blood stream is overcome any number of organisms may follow the first invader. The immunologic changes which permit the onset of sepsis are specific for one organism. Invasion by more than one organism rarely takes place, but when it does occur it is observed only in extremely young infants and invariably has a fatal outcome. Two points of special clinical interest are the appearance of an erysipeloid rash when hemolytic streptococcemia is superimposed on existing sepsis and the difference in the clinical course of true mixed septicemia and septicemia complicated by secondary bacteremia. When two organisms are present in the same blood an unusually long incubation period is followed by a short, acute course that terminates rapidly in death, but when the second invasion is complicated by primary sepsis the incubation period is short. The illness is characterized by two septic periods separated by an afebrile period; the second is coincidental with the second invasion.

Journal of Nat. Cancer Inst., Washington, D. C.

2:99-200 (Oct.) 1941

- Studies in Carcinogenesis: XV. Compounds Related to 20-Methylcholanthrene. M. J. Shear and J. Leiter, with assistance of A. Perrault.—p. 99.
- Identification of Cells from Induced and Spontaneous Leukoses of Dilute Brown Mice. Margaret Reed Lewis, Baltimore, and G. B. Mider, Bethesda, Md.—p. 115.
- Spontaneous Regression of Myelomas and of Their Metastatic Growths. Margaret Reed Lewis, Baltimore, and G. B. Mider, Bethesda, Md.—p. 123.
- Relationship Between Susceptibility to Induced Pulmonary Tumors and Certain Known Genes in Mice. W. E. Heston.—p. 127.
- Program for Research on Biology of Human Cancer. C. C. Little, Bar Harbor, Maine.—p. 133.
- Hepatic Changes and Subcutaneous and Pulmonary Tumors Induced by Subcutaneous Injection of 3,4,5,6-Dibenzcarbazole. H. B. Andervont, Washington, D. C., and J. E. Edwards.—p. 139.
- Intrapulmonary Transplantation of Adenomatous Gastric Lesion of Strain I Mice. H. B. Andervont, Washington, D. C., and M. B. Shinkin, Bethesda, Md.—p. 151.
- Pathologic Changes, with Special Reference to Pigmentation and Classification of Hepatic Tumors in Rats Fed *p*-Dimethylaminazo-benzene (Butter Yellow). J. E. Edwards and J. White.—p. 157.
- Effect of Carcinogens on Small Organisms: III. Cell Division Rate and Population Levels of Methylcholanthrene-Adapted *Paramecia*. R. R. Spencer, Bethesda, Md., and M. B. Melroy.—p. 185.
- Induction of Adenocarcinoma of Pyloric Stomach in Mice by Methylcholanthrene: Preliminary Report. H. L. Stewart, Bethesda, Md., and E. Lorenz.—p. 193.
- Hepatomas in Mice Induced with Carbon Tetrachloride. J. E. Edwards.—p. 197.

Kansas Medical Society Journal, Topeka

42:457-500 (Nov.) 1941

- Confusion in Differentiation of Heart Murmurs and Sounds. A. L. Smith, Lincoln, Neb.—p. 457.
- Active Treatment of Tuberculous Pulmonary Cavities by Surgery. J. E. Dailey, Houston, Texas.—p. 462.
- Undulant Fever. R. T. Westman, Kansas City.—p. 468.
- Adrenal Cortex Carcinoma. A. J. Retenmaier, M. S. Allen, Kansas City, and E. D. Liddy, Lawrence.—p. 471.
- *Clinical Observations on Use of Deproteinized Pancreatic Tissue Extract in Surgical and Routine Catheterization. H. E. Neptune, Salina.—p. 474.
- Acute Staphylococic Infections of Kidney. W. G. Gordon, Kansas City.—p. 478.

Deproteinized Pancreatic Tissue Extract with Catheterization.—Neptune used a deproteinized extract of pancreatic tissue to facilitate relaxation of the ureters for the catheterization of 4 patients with renal colic and of 30 patients requiring retrograde pyelography. Postinstrumental colic was not encountered, and there were no local reactions or untoward effects.

Medical Annals of District of Columbia, Washington

10:371-418 (Oct.) 1941

- Control of Anginal Syndrome with Low Carbohydrate Diet. B. P. Sandler, New York.—p. 371.
- Cold Pressor Test. J. A. Reisinger, Washington.—p. 381.
- Deafness: Consideration of Its Causes. W. A. Wells, Washington.—p. 387.
- Auscultatory Percussion: Modification Useful in Determining Cardiac Outline in Infants and Young Children. D. J. Abramson, Washington.—p. 393.
- Educational Campaign on Menace and Control of Acute Appendicitis. E. A. Cafritz, Washington.—p. 395.

10:419-458 (Nov.) 1941

- Health and Civilian Defense. F. H. LaGuardia, New York.—p. 419.
- Health of Nation as Revealed by Selective Service. L. G. Rowntree, Washington.—p. 425.
- Public Health and National Defense. W. F. Draper, Washington.—p. 429.
- Medical Field Service in Modern Combat. J. C. Magee, Washington.—p. 433.
- Aviation Medicine in the Navy. R. T. McIntire, Washington.—p. 437.

Michigan State Medical Society Journal, Muskegon

40:841-936 (Nov.) 1941

- Carcinoma of Stomach: Diagnosis and Results. J. T. Priestley, Rochester, Minn.—p. 867.
- *Effect of Oral Administration of Diethylstilbestrol on Menopausal Symptoms. J. W. Peelen, Kalamazoo.—p. 873.
- Modern Treatment of Traumatic Shock. H. A. Hanelin, Marquette.—p. 876.
- End to End Anastomosis: Mathematical Approach to Causes of Marginal Gangrene. A. H. Mollmann, Grand Rapids.—p. 882.
- Experiences in Premarital Council in Private Practice. R. N. Pierson, New York.—p. 884.

Menopausal Symptoms.—Peelen gave diethylstilbestrol orally to 30 patients with menopausal symptoms. The drug was taken for fourteen days to ten months. The initial daily dose was 1 mg. This was reduced shortly afterward to 0.5 mg. daily. The latter dose was to be taken for two weeks, but if nausea developed it was to be discontinued for one day and then resumed the next day. The menopausal flushes were usually held in abeyance after one week of treatment. The maintenance dose was then determined, and in most instances three to seven 0.5 mg. capsules weekly were sufficient. There was no consistent difference between the maintenance dose necessary to control the symptoms of surgical and that necessary in natural menopause. One patient, after only two weeks of treatment, remained free of symptoms for six months. One patient with senile vaginitis experienced relief from hot flushes with 0.5 mg. of diethylstilbestrol daily. However, the vaginitis did not improve until the dose was increased. After she had taken 1 mg. daily for ten days mature cornified epithelial cells appeared in the vaginal mucosa and the inflammation subsided. Of the remaining 28 patients 22 were relieved, 3 were partially relieved and 3 experienced no relief. Two of the 30 patients were unable to take the drug because of nausea and vomiting. These manifestations disappeared within twenty-four hours after the drug was withdrawn but recurred promptly when diethylstilbestrol was again administered. Three patients experienced slight nausea when diethylstilbestrol was given daily, but reducing the dose to 0.5 mg. two to four times a week relieved the flushes and the nausea did not recur. One patient had headaches when taking 0.5 mg. of diethylstilbestrol daily but had no difficulty when the same amount was taken on alternate days, and she continued to remain almost completely free from her previous menopausal symptoms.

Missouri State Medical Assn. Journal, St. Louis

38:365-392 (Nov.) 1941

- What Is the Matter with the Patient Who Is Chronically Tired? W. C. Alvarez, Rochester, Minn.—p. 365.
- Treatment of Chronic Arthritis. R. L. Cecil, New York.—p. 368.
- Modern Treatment of the Mentally Ill. A. E. Bennett, Omaha.—p. 370.
- Use of Laboratory Data in Clinical Medicine. M. Bodansky, Galveston, Texas.—p. 373.
- Surgical Care of Fresh Traumatic Wounds. Jean M. Stevenson, Cincinnati.—p. 378.
- Toxic Goiter: Practical Lessons Learned from a Fifteen Year Mortality Study. R. W. Bartlett and W. Bartlett Jr., St. Louis.—p. 381.
- Surgery in Tuberculosis. C. J. Mellies, Mount Vernon.—p. 383.

New England Journal of Medicine, Boston

225:763-804 (Nov. 13) 1941

- Study of Influenza in Boston During Winter of 1940-1941. H. E. Pearson, E. C. Eppinger, J. H. Dingle and J. F. Enders, Boston.—p. 763.
- Conditioned Reflex of Pavlov: Physiologist's Point of View. R. G. Hoskins, Boston.—p. 770.
- Id.: Practical Clinical Applications, Especially to Children. H. L. Higgins, Boston.—p. 772.
- Id.: Conditioned Behavior. G. E. Gardner, Boston.—p. 775.
- Postpartum Care: Preliminary Report of Studies in Follow-Up Clinic. C. W. Sewall and O. C. Mullaney, Boston.—p. 777.
- Cardiology: I. Chemotherapy in Heart Disease. II. False Diagnosis of Organic Heart Disease. H. L. Blumgart, Boston.—p. 782.

225:805-844 (Nov. 20) 1941

- Conservative Treatment of Occlusive Arterial Disease. I. S. Wright, New York.—p. 805.
- Postoperative Follow-Up Study of 469 Thyrocardiac Patients. A. M. Greene and L. M. Hurxthal, Boston.—p. 811.
- Pollen Disease in Absence of Positive Skin Tests. A. Colmes, Boston.—p. 817.
- Treatment of Meningitis. M. Finland and J. H. Dingle, Boston.—p. 825.

New York State Journal of Medicine, New York

41:2179-2274 (Nov. 15) 1941

- Significance of Muscular Balance in Acute Disorders of Posture and Locomotion. H. H. Jordan, New York.—p. 2203.
- Various Forms of Shock Therapy in Mental Disorders and Their Practical Importance. L. B. Kalinowsky, New York.—p. 2210.
- General Practitioner's Part in Campaign for Prevention of Blindness from Glaucoma. M. J. Schoenberg, New York.—p. 2216.
- Recent Advances in Gynecologic Hormone Therapy. S. H. Geist and U. J. Salmon, New York.—p. 2220.
- Multiple Necrotizing Skin Lesions in Chronic Ulcerative Colitis. J. Felsen, New York.—p. 2228.
- Sodium Phosphate in Treatment of Diabetes: Clinical Study. B. Joseph, New York.—p. 2232.
- Resin Dermatitis from New Pajamas and New Shorts. A. G. Gould, A. B. Berresford and N. S. Moore, Ithaca.—p. 2236.

North Carolina Medical Journal, Winston-Salem

2:579-634 (Nov.) 1941

- The Sick Individual as Biologic Problem. W. deB. MacNider, Chapel Hill.—p. 579.
- Bowman Gray School of Medicine of Wake Forest College. T. T. Mackie, New York.—p. 582.
- Correlation Between Blood Pressure and Concentration of Sulfocyanates in Blood. V. S. Caviness, T. A. Bell and G. H. Satterfield, Raleigh.—p. 585.
- Virus Diseases Affecting Eye and Adnexa. W. B. Anderson, Durham.—p. 592.
- Serologic Survey of Draft Registrants. J. H. Hamilton, Raleigh.—p. 598.
- Relationship of Malaria to Serologic Tests for Syphilis. F. S. Fellows, Raleigh.—p. 601.
- Salivary Calculi: Method of Removing Calculi from Submaxillary Gland: Report of Two Cases. W. P. McKay, Fayetteville.—p. 605.
- Practical Plan for Reduction of Infant and Maternal Mortality. C. D. Berry and R. A. Alter, Durham.—p. 607.
- *Treatment of Infections of Respiratory Tract with Sulfonamides. E. E. Menefee Jr. and J. A. Speed, Durham.—p. 611.

Respiratory Infections.—According to Menefee and Speed, during the influenza epidemic of January and February 1941, 116 students at Duke University with mild influenza were treated symptomatically and 111 were given an initial dose of 2 Gm. and then 1 Gm. of sulfathiazole every four hours until the temperature had been normal for twelve hours. The average duration of fever of the 111 students from the time of admission was one and six-tenths days. The average total dose of sulfathiazole was 13.5 Gm. The average stay in the hospital was three and four-tenths days. The figures for the group treated symptomatically were at least twice as great. Thirty-four per cent of the 111 treated patients complained of nausea and a sensation of "drunkenness." However, the symptoms were severe in only 2, and 1 patient complained of pain in the region of the right kidney after receiving 15 Gm. of sulfathiazole; the drug was withdrawn and the pain disappeared forty-eight hours later. Leukopenia, hemolytic anemia, cutaneous rash, drug fever or erythema nodosum did not develop in any of the patients. Pneumonia developed in 1 patient eight days after the receiving of the drug, in 2 symptomatically treated patients and in 2 completely untreated patients.

Surgery, Gynecology and Obstetrics, Chicago

73:759-890 (Dec.) 1941

- Papillary Carcinoma of Renal Pelvis: Diagnosis and Treatment. T. J. Kirwin, New York.—p. 759.
- *Gastrointestinal Tract in Hyperthyroidism. R. B. Brown, E. P. Tengergrass and E. D. Burdick, Philadelphia.—p. 766.
- Smooth Muscle Tumors of Gastrointestinal Tract and Retroperitoneal Tissues. T. Golden and A. P. Stout, New York.—p. 784.
- Dysgerminoma, Occurring in Pseudobemphrodite. C. H. Long, J. Ziskind and A. H. Storck, New Orleans.—p. 811.
- *Use of Synthetic Nonabsorbable Suture Material in Surgery: Preliminary Report. J. K. Narat, Chicago.—p. 819.
- Ligamentum Flavum: Its Relationship to Low Back Pain. M. C. Mensor and F. A. Fender, San Francisco.—p. 822.
- Mechanism of Ureteral Obstruction in Prolapse of Uterus. F. Lieberthal and L. Frankenthal Jr., Chicago.—p. 828.
- Intussusception in Adults: Consideration of Therapeutic Measures and Case Report. H. G. Nichols, Haverhill, Mass.—p. 832.
- Terminal Common Bile Duct and Duodenal Papilla: Roentgenologic Consideration. M. Feldman, Baltimore.—p. 838.
- Ferrule Caps for Head of Radius. K. Speed, Chicago.—p. 845.
- Malignant Thymoma: Clinical Pathologic Study of Eight Cases. C. A. Hellwig, Wichita, Kan.—p. 851.
- *Common Bile Duct Peristalsis: Preliminary Report. D. Macdonald, St. Catharines, Ont., Canada.—p. 864.
- Acromioclavicular Separation: New Method of Repair. B. M. Bosworth, New York.—p. 866.
- Test for Median Nerve Function. R. Wartenberg, San Francisco.—p. 872.
- Determination of Pyloric Patency Following Fredet-Rammstedt Operation for Congenital Hypertrophic Pyloric Stenosis. S. McLanahan, Baltimore.—p. 874.
- Use of Ribbon Gut in Uterine Suspensions. D. Chanis Jr., Panama, Panama.—p. 877.
- Effect of Distention on Whole Blood Specific Gravity and Whole Blood Potassium. S. B. Childs and J. Scudder, New York.—p. 880.

Gastrointestinal Tract in Hyperthyroidism.—Brown and his colleagues compared the changes in the gastrointestinal tract in 24 hyperthyroid patients and 14 normal controls and concluded that the following changes are characteristic of hyperthyroidism: (1) an increased frequency of achlorhydria, (2) an increased prominence of the gastric rugae, (3) an increase in the rapidity with which the stomach starts to empty, (4) a delay in the gastric emptying time and (5) increased tone and motility of the small and the large intestine.

Synthetic, Nonabsorbable Suture Material in Surgery.—Narat appraises the value of two nonabsorbable suture materials, zytol, or nylon, and vinyon, a derivative of resin vinylite. Each material was used in 30 unselected, consecutive, clean, major operations. The two materials were used as continuous sutures for closure of peritoneum and skin, but the fascia was sutured with interrupted stitches. There was no evidence that the tissues were irritated. At the end of seven to ten days the abdominal wounds were completely healed and there was no sign of inflammatory reaction. Vinyon or zytol and catgut were never employed together. Vinyon and zytol are extremely pliable, can be easily and repeatedly sterilized, do not fray, have a tensile strength which is not impaired when they are wet, are not attacked by pathogenic micro-organisms, are not susceptible to action of tryptic enzymes, are apparently nonallergic and are inexpensive. Investigation is necessary to establish their value in infected or contaminated wounds.

Peristalsis of Common Bile Duct.—Macdonald visualized peristalsis of the common bile duct under the fluoroscope in a man while a study was being made of a pathologic common bile duct. This was immediately recorded roentgenographically. The roentgenograms show conclusively that the possible causes of the changes in the internal diameter of the common bile duct are probably irritation by the T tube, extension of the tissue of the sphincter of Oddi into the duct and active peristalsis. Irritation could not produce such changes unless the inherent ability to contract and relax was present. It is unusual for sphincter tissue to extend so far up the duct. Therefore, in Macdonald's patient the common bile duct had the ability to move its contents onward by active effort. Fluoroscopic study showed that the shadow of the dye was changed in shape by a temporary constriction, and that some iodized oil distal to the constriction was rushed forward into the duodenum. The author believes that peristalsis should be expected in the common duct because the duct is an integral part of one of the most important physiologic functions of the body and an uninterrupted onward flow of bile is essential to good health, and that there must be some mechanism, other than back pressure, to overcome transient states of obstruction.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

25:509-552 (Nov) 1941

- Hydrophthalmia A Garrow and A Loewenstein—p 509
Central Retinitis in Girl Aged Eighteen Years Recovery Rosa Ford—p 521
Retinitis Pigmentosa with Macular Dystrophy Report of Familial Group A Sorsby—p 524
Fifteenth Century English Translation of John of Arderne's De Cura Oculorum R R James—p 526

British Medical Journal, London

2:569-600 (Oct 25) 1941

- Observations on Cerebrospinal Fluid in Closed Head Injuries J W A Turner—p 569
* 'Night Blindness'—Psychophysiological Study E Wittkower and T F Rodger in collaboration with G I Scott and B Semeonoff—p 571
Thrombosis in Arteriosclerosis of Extremities E D Telford and H T Simmons—p 575
Volvulus of Cecum Associated with Putrid Puerperal Endometritis and Gangrenous Vulvitis I Rose—p 577
* Some Factors Affecting Incidence of Postanesthetic Vomiting R M Davies—p 578

Night Blindness and Mental Disorders.—Wittkower and his collaborators investigated histories of 52 soldiers from 19 to 50 years of age, complaining of night blindness, 39 were less than 30, 1 was an officer, 8 were noncommissioned officers and 43 were privates. Nine had had night blindness since childhood 16 for several years, 13 noticed difficulty in seeing for the first time in the blackouts preceding the war and 14 have had difficulty since the war. Forty-two of the men were examined at the eye department of a military hospital. The study of 13 gave negative results, 6 were "one eyed" (2 had had one eye removed earlier in life, and in 4 one eye was defective because of trauma, inflammation or amblyopia, but the good eye of these 6 men presented no cause for the night blindness). 11 had slight errors of refraction with good vision with glasses and fair vision without glasses. 11 had moderately high errors of refraction and 1 had degenerative choroidoretinitis involving the peripheral parts of both fundi. Of 40 men tested dark adaptation was grossly defective in 4, defective in 11, subnormal in 16, low normal in 8 and high normal in 1. The dark adaptation of 33 younger and more intelligent soldiers chosen at random was grossly defective in 1, defective in 1, subnormal in 8, low normal in 13 and high normal in 10. Psychiatric examination of the 52 soldiers revealed that they were psychologically abnormal, and that the abnormality was far beyond that expected in the average population. Apart from the night blindness, most of them were unfit for military service, 9 patients had minor psychologic disorders that were not sufficient to interfere with an ordinary mode of life. 14 had acute and 13 chronic anxiety states, 8 had conversion hysteria, 4 had depression, 3 had schizoid or overaggressive psychopathic personalities and the disorder of 1 could not be classified.

Incidence of Postanesthetic Vomiting.—Davies believes that postanesthetic vomiting is influenced by the operative procedure, the sex of the patient and the anesthetic. From the records of 1,000 unselected patients who were operated on under various anesthetics it was observed that 2.6 per cent had nausea only, 15.7 per cent vomited once, 20.9 per cent vomited two to five times, 6.5 per cent vomited more than five times within eighteen hours and 0.8 per cent vomited more than five times in more than eighteen hours. Of four groups of 100 patients each (given respectively, nitrous oxide oxygen and ether, pentothal sodium, nitrous oxide and oxygen, pentothal sodium, nitrous oxide, oxygen and ether, and pentothal sodium cyclopropane, nitrous oxide, oxygen and ether) 3 per cent of the first group had nausea only, 17 per cent vomited once, 31 per cent vomited twice, 11 per cent vomited three times and none vomited four times, and 68.6 per cent of the women vomited as against 45.5 per cent of the men. The respective percentages for the second group were 6, 15, 20, 5, 0, 56.5 and 26, for the third group they were 0, 17, 21, 4, 0, 52 and 39.6, and for the fourth

group the percentages were 1, 10, 10, 6, 1, 26.5 and 10. A study of nausea and vomiting occurring in patients who had operations on the nose, nasopharynx and mouth does not bear out the remark that "patients are always sick after tonsillectomy." A study of minor gynecologic operations (dilation and curettage) revealed that the anesthetic had little effect on the incidence of vomiting but that dilation raised the incidence. The preoperative therapeutic factors capable of reducing the vomiting are absence of food in the stomach, avoidance of excessive purging, proper premedication combined with a basal hypnotic, substitution of pantopon (the hydrochlorides of the alkaloids of opium, principally morphine) for morphine and adequate doses of atropine and scopolamine to prevent secretion and consequent swallowing of saliva and mucus. Favorable postoperative factors are reception of fluids rectally or even orally, avoidance of anoxemia, engaging in as little movement as possible immediately after the patient's return to bed, sedation with soluble pentobarbital and the right lateral position in bed.

Lancet, London

2:475-506 (Oct 25) 1941

- Plea for Graduation at an Earlier Age A S Paterson—p 475
Traumatic Aneurysm of Posterior Tibial Artery, with Ioot Drop I Macpherson and H S Shucksmith—p 476
* Effect of Calcium in Case of Autohemagglutination H J Parish and R G Macfarlane—p 477
* Raynaud's Syndrome with Spontaneous Cold Hemagglutination I H C Bemans and W R Feasby—p 479
Glandular Fever with Jaundice Report of Two Cases L Martin—p 480
Tetany Following Prolonged Lactation on Deficient Diet A B Anderson and A Brown—p 482
Well Leg Traction Apparatus for Reducing Fractured Femoral Neck E M Evans—p 483
Primary Ovarian Pregnancy Case J N M Ross and T N Gledhill—p 484

Calcium in Autohemagglutination.—Parish and Macfarlane state that autohemagglutination occurred in a healthy man of 27 when his blood was withdrawn into citrate or oxalate at room or colder than room temperature. The reaction was reversible, for the clumps disappeared when the blood was warmed to body temperature and reappeared when cooled. Agglutination did not occur when the patient's serum was mixed with cells which were washed in physiologic solution of sodium chloride, unless the cells were resuspended in citrate or oxalate or a trace of citrated or oxalated plasma was added. Autohemagglutination of this type, the authors warn, may lead to errors in blood grouping unless the cells are washed in saline solution or the tests are carried out at body temperature.

Raynaud's Syndrome with Spontaneous Cold Hemagglutination.—Bemans and Feasby report 2 cases of Raynaud's syndrome in which autohemagglutination due to cold, in addition to angiospasm, may have been a causative factor. It is recognized that persons with one form of hypersensitivity often show other forms and it seems probable to the authors that in their 2 patients hypersensitivity to cold played a part in producing the agglutination and the Raynaud's syndrome, in the latter the arteriolar musculature would be the sensitive tissue.

Tubercle, London

22:207-230 (Sept) 1941

- Bronchial Obstruction in Pulmonary Tuberculosis H V Morlock—p 207
* Study on Effects of War Conditions on Group of Pneumothorax Treated Patients I Kellermann—p 212

Effect of War on Pneumothorax Treated Patients.—Kellermann states that war has adversely affected the 33 patients who had pneumothorax refills during the first eighteen months of the war. A comparison of these 33 patients with 25 similar patients who had their refills before the outbreak of hostilities shows no appreciable change in the clinical condition of the 33 patients. The 33 patients lost weight or failed to gain weight. The loss or failure to gain weight was not due to food rationing but to the extrinsic factors of anxiety, excitement resulting from the military situation and loss of sleep owing to the prolonged and intensive aerial activity.

Revista de la Asoc. Méd. Argentina, Buenos Aires

55:671-728 (Sept. 15-30) 1941. Partial Index

*Origin of Acute Anterior Poliomyelitis. C. Preioni.—p. 676.

Origin of Acute Anterior Poliomyelitis.—According to Preioni the mode of transmission of the virus of acute anterior poliomyelitis has not been definitely determined. The author observed two atypical and one typical case of the disease in a group of children with no contacts. The children lived on a farm in which, as well as in the large surrounding zone, no cases of the disease have been observed for the last four years. They had not been away from the farm for several months nor had they had visitors. All the animals on the farm and its surroundings were well. However, an epidemic of an infection had occurred one month before in the chickens and turkeys of the farm. The clinical picture of the infection in the birds resembled that of an acute or hyperacute anterior poliomyelitis. The animals exhibited a febrile condition and lay on the ground. Some died within three or four days; in others paralysis of the extremities developed after four or five days of the disease. The legs were more paralyzed than the wings. After about one week the birds began to improve, to eat and to move about. Paralysis regressed more or less slowly up to almost a complete disappearance in the birds with a moderate infection but not in those with an acute infection in which the sequels were permanent. One month after the occurrence of the infection one recovered turkey and one recovered hen were separately put into two different places with a normal turkey and a normal rooster which were brought from farms in which the epidemic did not occur. The newcomers got the infection and died. Two months after the occurrence of the infection two other recovered animals were put separately in contact with normal birds from localities free from the epidemic. Not one of the newcomers contracted the disease. A paralytic but otherwise healthy hen with complete paralysis of the legs was killed two months after the infection. The brain and spinal cord were normal on macroscopic examination. The brain, cerebellum and the pons were also normal in microscopic sections. The lumbar segment of the spinal cord and its corresponding spinal ganglions were the seat of a toxic infection with anatomicopathologic changes resembling those of acute anterior poliomyelitis in children. The author believes that the virus which causes acute anterior poliomyelitis is neurotropic. It is transmitted from chickens to children by the chicken louse (*Dismansium avis*) imported to the cities with the eggs and on the feathers of the birds. The increased incidence and virulence of acute anterior poliomyelitis during spring and summer seems to depend on the fact that cold weather diminishes the activity of the chicken louse and the virulence of the virus it carries.

Acta Chirurgica Scandinavica, Stockholm

85:361-454 (Oct. 8) 1941

*Total Extirpation of Patella. S. Friberg.—p. 361.

Fractures of the Crus or Tibia Treated According to Method of Parham: 49 Cases. E. Kjaer.—p. 389.

*Transduodenal Choledocholithotomy. E. Brattström.—p. 414.

Spontaneous Cure of Osteochondritis Dissecans in Knee Joint. G. Wiberg.—p. 421.

*Granular Changes in Leukocytes in Connection with Surgical Operations. K. Boman.—p. 432.

Subungual Neoplasms. S. B. Rasmussen.—p. 441.

Total Extirpation of Patella.—Friberg reviews the literature on complete extirpation of the patella and reports observations on 30 patients, 2 of whom underwent bilateral operation. Patellar chondromalacia was the cause of the operation in the greatest number of cases (23); in the other cases patellar extirpation was performed to repair complications after patellar or femoral fractures. In 26 cases the quadriceps tendon was sutured to the patellar ligament. The time of observation after the operation varied from twelve to sixty months; the average was twenty-one months. In 13 patients (40.6 per cent) the operation resulted in a knee joint that was entirely free from symptoms and which could stand severe strains in work and sports without fatigue; 14 other patients (43.8 per cent) were free from symptoms as far as ordinary exertion was concerned but complained of insufficient strength under greater strain and of want of stability when walking on uneven ground, hitting

the foot or stumbling. Nevertheless, the latter patients considered themselves much improved by the operation. Thus the operation resulted in an adequately functioning knee joint in 84 per cent of the cases. Suturing of the quadriceps tendon to the patellar ligament produced a good anterior contour of the knee joint. There was complete extension in all the joints in which the tendon had been sutured and in four of the six without such suture. There were no signs of arthritis deformans, but the elapsed time was too short for final evaluation in this respect. Slight calcified deposits were observed in 26 cases at the site of the patella; in 2 cases they were considerable and gave rise to symptoms. The author recommends complete extirpation in cases of recent splintered fractures and of certain simple fractures of the patella.

Transduodenal Choledocholithotomy.—Brattström reports 8 cases of transduodenal choledocholithotomy in which the operation showed good results on a follow-up. This method gives a better survey and is associated with less risk than the retroduodenal method. The technic is described. In the presence of signs of an ascending infection of the bile passages, of internal biliary fistulas or of insufficiency of Oddi's sphincter, the author recommends gastric resection according to Finsterer-Polya.

Granular Changes in Leukocytes in Surgical Operations.—Boman points out that in healthy persons granules demonstrated by the same method show relatively slight deviations from a certain norm. Hammar in 1912 was able to show by means of vital staining with brilliant cresyl blue that the granules of the neutrophil leukocytes change in number and size during morbid conditions and that they increase in number in infectious diseases. These observations were recently confirmed by Hedenius, who found that the granules increase in exophthalmic goiter and that they decrease in chronic polyarthritis. Hedenius employed the metachromatic dye toluidine blue for staining. Using the staining method of Hedenius, Boman made studies on patients in a surgical department. Investigating granular changes during and after operations, he dissolved solid toluidine blue in a 3.8 per cent citrate solution so as to obtain a 0.02 per cent staining solution. Blood samples were taken in the same way and with the same proportion between blood and staining fluid as for a sedimentation test. The glass tube containing the sample was sealed with a rubber stopper and placed for thirty minutes in a thermostat at 37 C. During this time "storage" took place, so that the granules appeared more and more distinctly. After removal of the tube from the thermostat a smear was made which was ready for microscopic examination as soon as it had dried in the air. The author observed a decrease in the number of granules in the neutrophil leukocytes during operation, after severe trauma and before death.

Ugeskrift for Læger, Copenhagen

103:1273-1300 (Oct. 2) 1941

Determination of Prothrombin, with Description of Procedure Especially Suited for Clinic. H. Larsen and P. Plum.—p. 1273.

Leptospirosis Canicularis with Serous Meningitis: Two Cases. M. Bjørneboe.—p. 1281.

*Value of Examination of Spinal Fluid in Diagnosis of Intracranial Tumors. Karen Bligaard.—p. 1286.

Treatment of Lipid Nephrosis with Potassium Nitrate. H. Kjaergaard.—p. 1289.

Value of Examination of Spinal Fluid in Diagnosis of Intracranial Tumors.—Bligaard reports that examination of the spinal fluid of 400 patients with verified intracranial tumors showed increased protein content and increased pressure in at least three fourths of the patients, with little or no increase in cells, but says that the examination is of almost no practical value in the diagnosis of intracranial tumors, as the increase in cells and protein is irregular and slight and such values may also appear in other diseases in and outside the central nervous system. Constant, well defined increase in the protein content is seen only in basal meningioma, papilloma in the fourth ventricle and acoustic neurinoma; here, however, the diagnosis is almost always assured by the clinical examination and symptoms of increased cranial pressure, which contraindicates lumbar puncture.

Book Notices

Training and Efficiency. [An Experiment in Physical and Economic Rehabilitation.] By E. Jokl, E. H. Cluver, C. Goedvork and T. W. de Jongh. Boards. Pp. 188, with 46 illustrations. Johannesburg: South African Institute for Medical Research, 1941.

This is an elaborate report on another series of investigations on health and efficiency of the South African Institute for Medical Research. It gives a statistical statement of the improvement in physical fitness of a group of thirty-two special service recruits between 16 and 31 years of age. They had been unemployed, and their posture, general bearing and nutrition were poor. They were given good living conditions, strict discipline, and three hours of physical training a day. The whole procedure is roughly comparable to our CCC camp activities. The purpose of a six months course of training was physical, economic and social rehabilitation. Physical measurements and tests were taken before and after. They included weight, height, posture, trunk length, biacromial diameter, chest girth and diameter. All are tested by a 100 yard dash and a 3 mile run before and after the period. This is not as strenuous as it might appear to be, for several took twenty-six minutes to cover the distance. Only two made better time than twenty minutes in the first test, but nine did so after training. Physiologic tests were centered on respiration and circulation. Breath holding, a standard test for British civil aviators, of whom sixty-nine seconds is required, improved in the trainees from twenty-nine and thirty-nine one hundredths seconds to sixty-eight and fifty-two one hundredths. The respiratory rate after exercise changed little, but the first exercise decline of vital capacity "strikingly decreased." Pulse rates improved; i. e., they were slower after the period of training, changing from seventy-three and fifteen one hundredths to sixty-three and twenty one hundredths. The reaction rise of pulse rate to a standard exercise diminished to the twelfth week in training, but no improvement resulted afterward. The authors report that blood pressure readings at rest showed "an astounding lack of change during the whole period of training." They did not take blood pressure in both positions, standing and lying, as in our standard (Crampton and Schneider) tests of circulatory efficiency. Nor were exercise tolerance tests emphasized, but much prominence was given to blood pressure response to respiratory efforts. Posture, weight and athletic performance improved. The improvement was greater in all particulars in those who were substandard in the preliminary tests. They are of the opinion that "preparing the soldier so that both his fitness for life and his efficiency for battle are on the highest possible level is the supreme demand of the moment." They state that "the standard of physical fitness of a considerable percentage of men in this country is lamentably low."

This is an unusually elaborate intensive study of the effect of six months' training of thirty-two underprivileged young men. The conclusions given, however, rest on a broader base. The authors Cluver and Jokl refer to their earlier investigation (1940) indicating a similar condition among twenty thousand school children. The authors refer also to Jokl's experiment of one hour of physical training a day given to two thousand five hundred trainees in the industrial training field. There was an improvement in health, discipline and working efficiency. They point to the need of highly competent instructors. On the basis of the results of several investigations they recommend a program of fitness testing and training for all men in the population. The report closes with the following:

We cannot close our eyes to the fact that an astoundingly large number of individuals will not seek, out of their own initiative, ways and means to develop and educate themselves to the optimum of their potential abilities. For this reason we have come to the conclusion that it is necessary to introduce some system of compulsion under which the state would take charge of young citizens who are, for any reason, unable or unwilling to carry their weight in the economic life of the community.

In suggesting the introduction of compulsion into our democratic society, we feel that we have to anticipate the argument that we are interfering with "individual initiative." We wish to say, however, that our plan to advocate the use of "reasonable compulsion" is the direct result of our observation of individual initiative being lacking in a large number of people. To allow the present state of affairs to con-

tinue would mean to invite conditions still more disastrous than those which we are witnessing at present.

Who possesses initiative? Only a small percentage of the people; just enough, we hope, to elaborate, organize and control schemes of the type we have in mind. On the other hand, we are convinced that our scheme will introduce into society a new element of vigor and action.

Resuscitation Equipment, Organization, Training and Procedures. By Command of the Army Council. Great Britain War Office Publications No. 5120. Paper. Price, 25 cents; 9d. Pp. 56, with 17 illustrations. New York: British Library of Information; London: His Majesty's Stationery Office, 1941.

The American reader who has become accustomed to regard resuscitation as synonymous with artificial respiration will be surprised to find that this pamphlet deals almost exclusively with transfusion. Of the fifty-two pages devoted to the text, three pages refer to oxygen therapy merely as a complementary measure. The purpose of this pamphlet, as stated, is to present recommendations for the training of a special officer at each military hospital, general hospital and casualty clearing station as well as field ambulances in the etiology, pathology and treatment of secondary (synonyms traumatic, hemorrhagic, wound) shock. Since Webster's Dictionary refers to resuscitation as . . . "to revive, revivify or as to resuscitate from drowning," it would appear that the British use of the word is entirely correct and for that matter so is ours. The broader English use of this terminology may, however, serve as a useful integrator of present closely related but dissociated activities. The pamphlet has a strong appeal for the American physician because of the fact that it has been prepared from "experience gained at Dunkirk and from air raids in 1940." It immediately creates the impression of a reality which we may ourselves soon face. The text is concise, clear and enriched with all necessary detail. The matter is divided into two sections: 1. General principles, including advantages of a resuscitation ward, training of nurses and orderlies, duties of the resuscitation officer, equipment, supplies and communications. 2. Notes concerning procedures, equipment and materials used in resuscitative work. This section includes the taking of blood, transfusion reactions and care of equipment. Practical suggestions are given relating to hemostasis, splints, the administration of oxygen, morphine, chemotherapy and refrigeration. The text is illustrated with numerous halftones and helpful drawings. The practical value of this carefully prepared pamphlet to the American physician at this moment of emergency can scarcely be overestimated. It deserves careful study and close imitation because of the simplicity of its approach. It serves as a substantial foundation on which resuscitation, as we are accustomed to think of the term, may subsequently be added.

Tratamento da lepra à luz de novas idéias. Por el Dr. J. M. Gomes, assistente-clínico do Instituto de Higiene, Universidade de São Paulo. Paper. Pp. 189, with illustrations. São Paulo: Empresa Gráfica da "Revista dos Tribunais," 1941.

In this volume the author describes a new specific for the treatment of leprosy. This time it is the vitamins, particularly vitamin A in the form of "Alfon." In the light of the recent discoveries on the mode of action of the vitamins, the author points out their benevolent possibilities in the treatment of a chronic infectious disease such as leprosy. It is stressed that the Hansen bacillus is not the only cause of this disease but that there is a predisposing factor in the form of a dietary deficiency.

The author has studied the morphology of *Mycobacterium leprae* in its human parasitism. He claims to have discovered that there are evolutionary and involutionary phases in its life cycle. The evolutionary phase is virus, homogenous acid-fast bacillus, granular acid-fast bacillus, acid-fast granulation and virus. The involutionary phase comprises virus, homogenous acid-fast bacillus, fragmentary acid-fast bacillus, acid-sensitive bacillus, acid-sensitive granulation and destruction.

"Alfon," the new specific, is the trade name of a product manufactured by the "Laboratorios Farmaceuticos Reunidos" of São Paulo, Brazil. It is stated to be a 2 per cent colloidal suspension of carotenoids in physiologic solution. A carotenoid is a previtamin A obtained from plant life. After injection, carotenoids are said to be transformed into vitamin A through fermentation, which takes place in the liver.

As a foundation for this new form of therapy the author discusses in detail the similarity between the early manifestations of leprosy and those of avitaminosis A. Vitamin A is spoken of as the great anti-infection vitamin, the stimulator of phagocytosis and the protector of epithelium. It is considered the essential vitamin for the preservation and proper functioning of the ocular apparatus. By animal experimentations it is said that it has been shown that a lack of this vitamin leads to a demyelination of the peripheral nerves. Leprosy, the author states, is most prevalent in localities where the native food is poor in vitamin A. The potentiality for good of vitamin A in leprosy is pointed out in that it is the epithelium, the peripheral nerves and the ocular tissues which are most vulnerable in this disease.

"Alfon" is claimed to have two modes of action in leprosy. The one, a biotrophic action on the germs, is a specific action, whereby the evolution of *M. leprae* is hastened through its various phases to its final degeneration stage and disappearance from the lesion. The other, a nonspecific action, is a stimulation of the body tissues' defensive mechanism against infections in general.

The final chapter of the book deals with case reports. Of 400 cases treated with Alfon, only 238 are reviewed because of adverse circumstances in the others. The period of observation is eight to nine months, which is short for such a chronic disease. The data presented are not convincing as to the permanence of the improvements claimed to have occurred. There have been some adverse reports in the medical literature on the use of Alfon in leprosy. The most objectionable feature of this product has been the manner in which it has been extensively advertised in the public press of Brazil as a true specific. At the National Leprosarium, Carville, La., no favorable results were noted in 10 cases of leprosy after ten months of treatment. The best that can be said for vitamin therapy in general is that it is still in its experimental stage.

Leaders of Medicine: Biographical Sketches of Outstanding American and European Physicians. By Solomon R. Kagan, M.D. Cloth. Price, \$3. Pp. 176, with 4 portraits. Boston: Medico-Historical Press, 1941.

This small book comprises fairly extensive notes on the careers of twelve leaders of medicine: Jacob Henle, Rudolf Virchow, Silas Weir Mitchell, Abraham Jacobi, Sir Thomas Clifford Allbutt, Jacob Da Silva Solis-Cohen, John Shaw Billings, Julius Cohnheim, Carl Weigert, Sir William Osler, William Henry Welch and Paul Ehrlich. These reviews are interesting, instructive and well written, showing perhaps the influence of the late Fielding H. Garrison, under whose inspiration the volume was written. The timeliness of certain portions of the book is apparent in a quotation from a letter of William Osler written in Berlin in 1884, who said "Should another Moses arise and preach a Semitic exodus from Germany, and should he prevail, they would leave the land impoverished far more than was ancient Egypt by the loss of the 'jewels of gold and jewels of silver' of which the people were 'spoiled.' To say nothing of the material wealth, enough to buy Palestine over and over again, there is not a profession which would not suffer the serious loss of many of its most brilliant ornaments, and in none more so than our own." A few of the more important historical statements in this book have been condensed and used in the Student Section of *THE JOURNAL* in the column "Do You Know What Physician—" Perhaps the success of this venture will encourage the author to go further into the field of medical history.

The Early Treatment of War Wounds. By William Anderson, O.B.E., M.B., Ch.B., Surgeon and Lecturer in Surgery, Aberdeen Royal Infirmary, Aberdeen. Oxford War Manuals. General Editor: The Rt. Hon. Lord Horder, G.C.V.O. Cloth. Price, \$1.50. Pp. 96, with 12 illustrations. New York & London: Oxford University Press, 1941.

This small "Oxford War Manual" is in reality a summary of the experiences of the author in World War I; as stated in the preface, he hopes that a record of the failures and successes in the treatment of the wounded will act as a starting point for the great advances which he is confident will be achieved during the present struggle. The first part of the first chapter is a masterful statement of the general principles for the care of the war wounded and should be read by every medical officer. The paragraphs on splinting in fractures are likewise excellent. Over half the manual, however, does not deal, as indicated in

the title, with the early treatment of war wounds but with the later operative procedures. The "present struggle" has already gone two years, which to the reviewer seems long enough to include in a manual of this kind some of the "great advances" which have already been achieved. For example, a sufficient experience has accumulated, certainly as judged by the many English reports, establishing the value of the sulfonamide drugs both in the prevention and in the treatment of war wound infections. The use of tetanus toxoid has also been extensive enough to commend it in the prophylaxis of lockjaw. The treatment of compound fractures has been so improved during recent years as to warrant inclusion in a current war manual. Plasma, liquid and dry, also deserves wide consideration on the basis of contemporary experiences. These and other topics, barely mentioned in the present work, could with profit be added to or incorporated with the experiences of twenty-five years ago. These experiences, while basic and valuable, seem in certain cases at least as outmoded as a model T Ford.

Effective Living. By C. E. Turner, A.M., Sc.D., Dr.P.H., Professor of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, and Elizabeth McHose, B.S., M.A., Director of Physical Education for Girls, Senior High School, Reading, Pennsylvania. Cloth. Price, \$1.90. Pp. 432, with 164 illustrations. St. Louis: C. V. Mosby Company, 1941.

This is an excellent volume dealing with the problem of healthful living and how it may be attained. Part I deals with the individual's mode and manner of living. It discusses exercise, the mechanical use of the body, care of the skin, mental hygiene and food and gives adequate information on the vital organs. It does not go into minute detail in describing the respiratory system, the circulatory system and the excretory system but presents in an interesting way sufficient information on anatomy and physiology for most lay readers. In part II the authors discuss effective living in the family. Here healthful living conditions in the home are discussed, as well as the health of the family group. The chapter on becoming good ancestors will be particularly useful to the reader. Part III deals with effective living in the community. This part discusses sanitation, the various health agencies and their programs, as well as information on the prevention of communicable disease and the lowering of the death rate. Of particular value is the self-checking chart at the end of each subject and also the lists of problems and activities.

Las funciones digestivas en el organismo tuberculoso (estudio clínico y coprológico). Tesis de doctorado presentada por Juan Antonio Tabanera. Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Acta No. 5346. Paper. Pp. 153, with 15 illustrations. Buenos Aires, 1940.

The author selected the subject of functions of digestion in tuberculous persons for his doctoral thesis. The clinical and coprologic study is based on observations of patients of his personal clientele. The chapters of the book cover the following topics: 1. Physiology of digestive tract from mouth to rectum. 2. Constituents of food and chemical transformation of food and alimentary bolus during digestion. 3, 4 and 5. Macroscopic and microscopic aspects, chemical constituents, chemical reactions and bacteriology of normal feces and of feces of patients with pulmonary tuberculosis, alone or complicated by intestinal tuberculosis. 6. Coprology in diagnosis of intestinal tuberculosis. 7. Clinical aspects and course of nontuberculous intestinal inflammation, colitis, intestinal ulceration and intestinal tuberculosis; tests for differential diagnosis, especially the catalase test. 8. Diet in intestinal tuberculosis, in accordance to location of tuberculous lesions in a given intestinal segment; also importance of vitamins in diet and in therapy of intestinal tuberculosis. The book ends with three pages of bibliography.

Medico-Legal Law Brief in Relation to Malpractice Suits with Citations. By John Ralph Ballinger, B.S., M.D., Chairman of the Medico-Legal Committee of the Illinois State Medical Society and of the Chicago Medical Society. Paper. No pagination. Chicago: The Author, 1941.

The author of this small brochure has been chairman of the Medico-Legal Committee of the Illinois State Medical Society and of the Chicago Medical Society for twenty-eight years and here presents, in brief form, comments on the nature of the complaints that have been filed by patients against members of the medical profession in Illinois, with citations to court decisions in point.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

VITAMINS AND RHEUMATOID ARTHRITIS

To the Editor—What is the present status of vitamin B therapy in arthritis and allied conditions? Edward Suckle, M.D., Coatesville, Pa.

To the Editor—Recently the treatment of chronic arthritis with high doses of vitamin D has been advocated. European publications state that the administration of high doses of vitamin D over a prolonged period is liable to produce irreversible arteriosclerotic changes. What is known on this subject? Lothar Luft, M.D., New York.

ANSWER—A deficiency of almost every one of the vitamins has been regarded as the cause of rheumatoid arthritis. A deficiency of vitamin B was first blamed by Fletcher in 1922, then of vitamin D by Dreyer and Reed in 1935 and a little later of vitamin C by Rinehart in 1935. More recently deficiencies of vitamins A and E in rheumatic patients have been studied. Such is the current frenzy of the layman for vitamins that rheumatic patients are pestering their physicians for the "antirheumatism vitamin" and they feel badly neglected unless some vitamin is prescribed.

VITAMIN A

Deficiencies of vitamin A in the plasma were noted by Race in 1937 among patients who had rheumatoid arthritis. This observation was confirmed by Hall, Bayles and Soutter in 1940, who suggested that these deficiencies might be responsible for the supposed susceptibility of rheumatic patients to infections of the upper part of the respiratory tract. The administration of vitamin A concentrates readily corrects the plasma deficiencies but does not improve the condition of the joints in rheumatoid arthritis (Monroe, Hall, Bayles and Soutter).

VITAMIN B COMPLEX

In 1922 and later years Fletcher suggested that certain features of rheumatoid arthritis might be related to a deficiency of vitamin B. In rheumatoid arthritis certain of the symptoms of thiamine hydrochloride (vitamin B₁) deficiency are sometimes present (weakness, anorexia, muscular atrophy, reduced dextrose tolerance, abnormalities of size and position of colon) but others are absent (polyneuritis, lymphopenia, excess lactic acid). Fletcher and others were able to produce atonic bowels in rats given diets deficient in vitamin B but no definite arthritis resulted. The diets of the patients of Sherwood and Thomson suffering from rheumatoid arthritis were rarely deficient in vitamin B, and neuritis was extremely rare. The administration of vitamins B₁ and B₂ has not produced any notable effect on arthritic patients. For these reasons most workers do not regard rheumatoid arthritis as a B avitaminosis (Race, Steinberg, 1936).

Sherwood and Thomson in 1939 noted that the home diets of their patients who had rheumatoid arthritis were commonly deficient in riboflavin (vitamin G), but no other clinical or therapeutic studies have been made.

Disappointed in their search for germs as the cause of rheumatoid arthritis and in the results of removal of foci of infection and administration of vaccines, physicians now are following the trend of the times and seeking evidence for an antirheumatic vitamin. Such a vitamin has not been discovered so far. Patients who have rheumatoid arthritis, like those who have many other diseases, often present subnormal amounts of various vitamins in their plasma, but these deficiencies are not specific for rheumatoid arthritis nor are they of proved etiologic significance. Like normal persons, arthritic patients should insure for themselves an adequate daily quota of vitamins but, as some one has said aptly, these should be bought at the grocery store, not at the drug store.

ASCORBIC ACID (VITAMIN C)

In 1935 Rinehart reported that subacute or chronic vitamin C deficiency produced in guinea pigs an arthropathy which he believed was somewhat similar to rheumatoid arthritis. Some of his patients suffering from rheumatoid arthritis presented evidence of vitamin C deficiency. Therefore Rinehart suggested that vitamin C deficiency might be an etiologic factor in rheumatoid arthritis. He and others (Rinehart, Greenberg and Baker) later reported low concentrations of ascorbic acid in the plasma in rheumatoid arthritis. That such a deficiency exists has been

noted since by others also, and this deficiency of vitamin C in the plasma may exist whether the patient's diet is or is not deficient in the vitamin. However, scurvy is not present. To Rinehart and his colleagues in 1938 the results in some cases of rheumatoid arthritis in which ascorbic acid was given were "distinctly encouraging," but others who have administered vitamin C in large amounts parenterally and orally have not observed any notable effects on the joints, although the vitamin deficiencies in the plasma were corrected readily (Holbrook and Hill, Race, Jacques).

VITAMIN D

Two arthritic patients to whom Dreyer and Reed in 1935 gave massive doses of vitamin D for their hay fever noted improvement in their joints. Therefore Dreyer and Reed gave similar large doses to other arthritic patients with reported improvement. Diminution of pain and an improved sense of well-being presumably were noted. But toxic symptoms (nausea, polyuria, polydipsia, vomiting) fairly frequently appeared. Later Reed adopted a working hypothesis that in "arthritis" there may be an obscure disturbance of calcium metabolism which vitamin D somehow "stabilizes." But many workers have failed to demonstrate any abnormality of the metabolism of calcium in rheumatoid arthritis, and Reed admitted that patients receiving massive doses of vitamin D did not exhibit any consistent changes in the concentration of calcium or phosphorus in the blood and urine. The most voluble proponent of vitamin D therapy has been Farley, who repeatedly has reported "remarkable results" in almost every case of "arthritis" so treated. Farley has insisted that vitamin D as prepared by the Whittier process (citron) is more effective and less toxic than vitamin D preparations prepared otherwise. Snyder and Squires in their paper of 1940 appeared to share this view, but this contention remains unproved and the further report of Farley in 1941 continued to exhibit intemperate enthusiasm and a lack of critical judgment.

Other preparations of vitamin D have been given to arthritic patients by several workers (Cohen, Abrams and Bauer, Steinberg, 1938, Muether), who have not noted any striking results; there has been occasional subjective improvement but little or no objective improvement and no significant reduction in sedimentation rates. The use of massive doses of vitamin D in treatment of patients suffering from chronic arthritis therefore has been called "irrational" (Ishmael and McBride) or even "dangerous" (Cohen). The Council on Pharmacy and Chemistry of the American Medical Association in 1937 did not accept vitamin D as an approved remedy for any form of arthritis, contending that there is no evidence that the doses used have been nontoxic or effective. The Council did not find any scientific evidence to support the claims made and deprecated the unwarranted exploitation of these products by certain manufacturers. Despite the Council's report, certain preparations of vitamin D, notably Ertron, continue to be advertised vigorously, one might say offensively in view of the glowing terms applied to them. These preparations are rather expensive when their use is long continued, and they do not seem to be worth the money even though their long continued use is probably not as dangerous as some writers have suggested.

VITAMIN E

To date vitamin E has not been linked with rheumatoid arthritis, but Steinberg suggested in 1941 that primary fibrositis may represent not an infectious process but a metabolic disturbance, perhaps a deficiency of vitamin E. However, confirmatory evidence is obviously indicated before the therapeutic possibility of vitamin E in this field can be evaluated.

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TREATMENT OF LATE SYPHILIS IN PATIENT WITH POOR VEINS

To the Editor:—A woman aged 50, weighing 250 pounds (113 Kg.), has late syphilis. It has been about twenty-five years since the initial lesion. The diagnosis is syphilitic aortitis. The patient's veins cannot be isolated for intravenous medication. 1. What is the value of sulfarsphenamine? 2. What is the relative value of sulfarsphenamine as compared with neosarsphenamine? 3. What are the dosage and frequency of administration? Is it painful? 4. What is the usefulness of iodides, mercury and bismuth compounds in such a case? 5. What course of treatment would you recommend?

Maxwell Herschleider, M.D., Gary, Ind.

ANSWER.—1. Sulfarsphenamine should not be used for adults because of the risk of serious reactions, particularly postarsenical dermatitis, blood dyscrasias and encephalitis. Bismarsen is a much safer arsenical drug for use in these circumstances.

2. With adequate dosage and spacing of dosage, bismarsen may be considered under the circumstances to be the equivalent of neosarsphenamine.

3. The usual dose is 0.2 Gm. given twice weekly. There is often mild to moderate pain after the intramuscular injection of bismarsen, which may be minimized by proper technic.

4. Either or both heavy metals and potassium iodide may be used in a case such as that described.

5. Treatment may begin with twelve weekly intramuscular injections of bismuth subsalicylate in oil, each 0.2 Gm., combined with the simultaneous administration of potassium iodide by mouth in a dose of 1 to 2 Gm. three times daily. This may be followed by a course of twenty intramuscular injections of bismarsen, the first dose of which should not exceed 0.05 Gm. and subsequent doses of 0.1 to 0.2 Gm., depending on the type and extent of aortic involvement. If the patient has uncomplicated syphilitic aortitis without evidence of cardiac embarrassment or congestive heart failure, the average dose of 0.2 Gm. twice weekly may be used. If, on the other hand, either sacular aneurysm or aortic regurgitation is present or if the patient has beginning signs of myocardial failure, the dose should not exceed 0.1 Gm. Thereafter treatment should be kept up for a minimum period of two years with courses of bismuth subsalicylate alternating with courses of bismarsen. If it is desired to substitute mercury for bismuth subsalicylate, intramuscular injections of any mercurial product should not be used, but instead the drug should be given by inunction.

It goes without saying that this antisyphilitic treatment should be accompanied by appropriate general medical care, including weight reduction.

Further details as to the treatment of cardiovascular syphilis may be found in chapter 20 of Stokes, J. H.: *Modern Clinical Syphilology*, Philadelphia, W. B. Saunders Company, 1934, or in chapter 18 of Moore, J. E.: *Modern Treatment of Syphilis*, Springfield, Ill., C. C. Thomas, 1941.

VACCINES FOR CHRONIC SINUSITIS

To the Editor:—What is the consensus among otolaryngologists as to the efficacy of vaccines in the clearing of chronic sphenoiditis? Which is preferred, stock or autogenous? What is the usual method of employment of the vaccine?

M.D., Pennsylvania.

ANSWER.—It is impossible to answer categorically as to the efficacy of vaccines in chronic sinusitis. In general it may be fairly said that many or most rhinologists are dubious about their value in these conditions. There is, however, considerable evidence on the other side which must be accepted with respect until the question is more positively settled.

For instance, Walsh in experimental animals instilled bacterial antigen intranasally and found a "mobilization of leukocytes and macrophages in the subepithelial areas, conditions which elsewhere in the body have been shown to be associated with increased resistance to infection." Furthermore, there was produced by this instillation specific agglutinins in the nasal mucosa, the blood serum and various organs of the body. Walsh worked with *Salmonella paratyphi B* and *Eberthella typhosa*. Others, notably Linton, obtained experimentally similar results using virulent strains of streptococci. Walsh made a vaccine com-

posed of various strains of bacteria obtained from the nasal passages of patients, which was to be instilled in the noses of patients desiring relief from colds and the like.

Similar results have been obtained in patients by use of a vaccine composed of numerous strains of organisms recovered from the nasal passages of persons suffering from infections. Gundrum treated 500 patients suffering from chronic sinusitis. He used stock bacterial antigens made after Besredka's method and instilled it after the displacement method of Proetz. A large number of patients reported permanent improvement.

Putting aside the various claims for and against the use of vaccines, it may be agreed that results must depend in large degree on the amount of mucous membrane and even bone damage present in each individual case.

If an autogenous vaccine is used it must be reasonably certain that the offending organisms will appear in the culture and vaccine and not be overshadowed or overgrown by others with no etiologic significance. In this respect stock vaccines may be superior because they contain numerous strains of possible offenders.

Vaccines may be employed by injection or instilled in the nose with a dropper or used after the displacement method of Proetz. Information available to date is too indefinite to permit of positive recommendations.

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MANAGEMENT OF FRACTURED TEETH AND ALVEOLAR PROCESS

To the Editor:—A patient aged 60 had a simple fracture of the upper alveolar process of the upper jaw with a fracture of the roots of two incisors. The fracture was reduced within five minutes. The teeth were not extracted. They were replaced as near as possible to their normal position. Some of four upper incisors were pulled downward but were replaced in as nearly normal a position as possible. The teeth act as a splint. Should the fractured teeth be extracted? If so, how soon if no complications develop? If one of the teeth was filled years ago and the filling did not reach the bottom of the cavity, should it be extracted? It is taken for granted that the nerve of the tooth was killed. When the root of a tooth is fractured should it be extracted? I am referring only to the teeth mentioned. The patient has chronic arthritis.

M.D., New Mexico.

ANSWER.—As a general rule, the preferable treatment of a patient such as that described is conservative, rather than immediate extraction of such fractured teeth, especially if the teeth can be utilized in the stabilization of the fractured bones. If complications arise, then the fractured teeth can be extracted as indicated. If the teeth can be utilized in immobilizing the fracture until it has healed there is less danger of loss of bone through infection and sequestration. It is important to conserve the bone and wait until such time as the problem resolves itself into a dental one. However, the clinical aspect of the patient should govern the treatment.

RELEASE OF TOURNIQUET

To the Editor:—Concerning the frequency of temporary release of a tourniquet applied for arterial hemorrhage, a lecturer to industrial classes in first aid tells me that the men like definite time, not a variable of from ten to twenty minutes as stated in various manuals. What would be the best definite time to give these men for such frequency?

Harold B. Osborn, M.D., Fillmore, Calif.

ANSWER.—In case a tourniquet is applied for the control of arterial hemorrhage, it is wise to release the tourniquet for a few minutes at thirty minute intervals. If the extremity is packed in ice, this time interval can be safely extended to one hour.

MULTIPLE LIPOMAS

To the Editor:—A man aged 26 has had numerous subcutaneous lipomas involving the limbs and the trunk for the last six years. These vary in size, number at least a hundred and are painless except when they are irritated at friction points. The general health is good, and there are no other abnormalities. Biopsy done under local anesthesia revealed these tumors to be lobulated and encapsulated and to consist entirely of fat cells and connective tissue. The patient states that the tumors are increasing in number with time and in size as he gains weight. Is there any therapy besides excision that will help him?

Anthony E. Sukis, M.D., Chicago.

ANSWER.—There is no effective therapy other than excision for such lesions.

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THE SPECIFIC GRAVITY OF HEALTHY MEN

BODY WEIGHT \div VOLUME AS AN INDEX
OF OBESITY

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The fundamental biologic determination of corporeal specific gravity, essentially a relationship between weight and unit volume, has been neglected in the modern classification of healthy persons. Stern¹ and Spivak² emphasized the value of the measurement of corporeal density, but their experimental data are not conclusive. Of especial interest is the relationship between specific gravity and the fat content of the body.

The presence of an indeterminate amount of excess adipose tissue renders difficult any precise computation, for example, of metabolic rate or dosage of drugs in terms of total body weight. The important consideration should be the weight of the lean body representing the active mass of protoplasm.

In this paper the data support the concept that the comparatively low specific gravity of fat makes the measurement of the specific gravity of the body mass valid for the estimation of fat content.

The comprehensive, statistical analysis of Boyd,³ however, covering seven hundred and eighty-seven values reported since 1906 does not permit a classification of individuals with respect to obesity. The analyzed results,³ moreover, obtained by different investigators elude comparison by reason of the unknown quantity of air present in the lungs when the measurements were made.

In the present investigation the values of specific gravity obtained on ninety-nine healthy naval men in the 20 to 40 year age group were corrected by determining the residual air volume. The results obtained permit the classification of individuals as to degree of obesity and serve as a single index of physical fitness to supplement the standard age-height-weight tables

which frequently lead to a designation of overweight for well developed men in contrast with a designation of normal weight for more obese individuals who fall into a lower weight group.

METHOD OF PROCEDURE

The essential measurement is that of body volume, which, based on Archimedes' principle, can be conveniently determined by the method of hydrostatic weighing, i. e. equivalent volume = weight in air — weight in water. The weight in water is determined by suspending a subject below the surface of the water on a line leading up to a spring scale graduated in ounces. A weighted lead belt maintains negative buoyancy for all types of persons.

Two weighings in water serve to check the accuracy of the procedure: one at the completion of maximum inspiration and the other at the end of maximum expiration.

The difference in weight obtained records hydrostatic displacement, which serves as a measure of vital capacity. This determination of vital capacity when corrected for the effect of the mean hydrostatic pressure on thoracic volume gives values comparable to those obtained by the standard method employing spirometry.

In the determination of residual air, the inhalation of a helium-oxygen mixture for a period of three minutes following maximal expiration brought about a removal of the residual nitrogen. The subsequent washing out during normal respiration of the previously inhaled helium with 50 liters of air or oxygen permitted an accurate computation of residual pulmonary volume comparable to unpublished results obtained by Willmon and Behnke using the nitrogen dilution method. Duplicate determinations usually gave values which differed by not more than 150 cc.

CIRCUMFERENTIAL MEASUREMENTS OF CHEST AND ABDOMEN

The circumferential measurements of the chest and the abdomen are subject to considerable variation unless special care is exercised. The values recorded were obtained usually in the midmorning, during quiet respiration and with the arms of the subject extended vertically. Under these circumstances errors arising from altered muscular tonus or voluntary retraction of the abdomen were minimized. The chest measurement was made at the level of the nipples, the abdominal measurement at the level of the umbilicus.

SOURCES OF ERROR

The greatest error arises from the determination of residual lung volume. If the variation in this measurement is of the order of 200 cc., values for specific gravity will be subject to an error of ± 0.003 .

The material in this article should be construed only as the personal opinion of the writers and not as representing the opinion of the Navy Department officially.

1. Stern, H.: Investigations on Corporeal Specific Gravity and on the Value of This Factor in Physical Diagnosis, *M. Rec.* 59: 204-207, 1901.

2. Spivak, C. D.: The Specific Gravity of the Human Body, *Arch. Int. Med.* 15: 628-642 (April) 1915.

3. Boyd, Edith: The Specific Gravity of the Human Body, *Human Biology* 5: 646-672 (Dec.) 1933.

Repeated determinations on the same individual permitting the use of a constant volume for residual air give values that agree to within 0.003.

A second error may arise from the presence of gas in the abdominal viscera. In an attempt to minimize this error, determinations were made in the morning on the fasting individual.

TABLE 1.—Example Illustrating the Method of Computing Specific Gravity

	Pounds	Kilograms
Weight of the body in air . . .	183 00	83 20
Weight in water, full inspiration . . .	14 20	6 45
Weight in water, complete expiration . . .	23 20	10 55
Vital capacity computed from the volume of water displaced . . . 4,090 cc		
Vital capacity by spirometric measurements 4,150 cc		
Volume of residual air.. 1,200 cc		
Weight of abdominal belt	13 75	6 25
Corrections		
Gross weight in water	23 20	10 55
Weight of belt	13 75	6 25
Weight in water, not corrected for residual air	9 45	4 30
Correction for residual air (1,200/453)	2 65	1 20
Net weight in water . . .	12 10	5 50
$\text{Specific gravity} = \frac{\text{Weight}}{\text{Volume}} = \frac{183}{170.9} = 1.071$		

RESULTS OBTAINED

In table 4 are listed values obtained on ninety-nine healthy men in military service. From analysis of the data, two facts are apparent: 1. Specific gravity increases inversely in relation to weight. 2. The difference between abdominal and thoracic girth can be correlated with specific gravity.

In table 2 the values for residual air indicate that any error in the determinations will not appreciably alter the relative classification of the subjects with respect to specific gravity. It is apparent that the range of values for residual air is large so that any individual measurement of specific gravity must be accompanied by an actual determination of residual air. For groups of twenty or more men, however, when average values are compared, an arbitrary figure of 1,450 cc. for

TABLE 2.—Residual Air and Vital Capacity Values

Specific Gravity	Number of Men	Average Residual Air, Liters	Residual Air, Range	Average Vital Capacity, Liters	Vital Capacity, Range
1.020-1.029	2	1.315	1.312-1.317	4.350	4.100-4.600
1.030-1.039	2	1.357	1.200-1.513	4.125	4.100-4.150
1.040-1.049	4	1.131	0.850-1.486	4.075	3.700-5.000
1.050-1.059	20	1.525	1.060-2.398	4.883	3.575-6.000
1.060-1.069	23	1.179	0.707-1.643	4.757	3.975-6.005
1.070-1.079	27	1.504	0.853-2.650	4.820	3.875-6.200
1.080-1.089	14	1.379	0.706-2.126	5.003	4.400-5.750
1.090-1.099	7	1.730	1.093-2.204	5.085	4.250-5.970

residual pulmonary volume will not introduce an error greater than ± 0.003 in the computation of specific gravity.

In table 5 the ninety-nine subjects are divided into three groups on the basis of high, low and middle range values for specific gravity. In the low group are listed all values below 1.060, and in the high group are values above 1.074.

Table 3 indicates how the loss of 19.5 pounds of adipose tissue in one subject results in a change in specific gravity. The values for the weight in water

have been corrected for a residual air volume of 1,200 cc. One notes that a decrease in abdominal girth is followed by an increase in specific gravity.

COMMENT

Difference in Thoracic and Abdominal Girth as an Index of Corpulence.—Although variation in individual values except for the most obese subjects is considerable, the group values in relation to specific gravity show a definite trend according to table 4. The lean subjects on inspection possess the greater circumferential difference between chest and abdomen in comparison with the corresponding difference in fat men.

Body Weight and Specific Gravity.—The relationship between body weight and specific gravity (table 4) is not absolute but relative in the sense that for any selected group of homogeneous persons the heaviest men tend to have specific gravity values in the low range of the scale. The rather uniform decrease in average weight in relation to specific gravity is to be regarded as coincidental. Lean men, for example, weighing 200 pounds will have high specific gravity values in contrast with the measurements on fat men of the same weight.

The average weight, for example, of thirty-eight men in the high specific gravity group (table 5) was 148.7 pounds. In a separate series of determinations on exceptional athletes, presented in the second paper, a similar high value for specific gravity was associated

TABLE 3.—Individual Loss of Weight in Relation to Specific Gravity

Date	Specific Gravity	Weight				Circumference			
		In Air		In Water (Net)		Chest		Abdomen	
		Pounds	Kg.	Pounds	Kg.	Inches	Cm	Inches	Cm
3/12	1.056	202.5	92.0	10.8	4.9	38.5	97.8	35.2	89.4
7/1	1.060	194.5	88.4	11.0	5.0				
8/13	1.066	187.0	85.0	11.6	5.3	38.7	98.3	35.0	88.8
10/9	1.071	183.0	83.2	12.1	5.5	39.1	99.3	31.4	79.7

with an average weight of 200 pounds. These facts suggest a fundamental relationship between adiposity and specific gravity.

Specific Gravity and Obesity.—Corporeal density serves as an index of the amount of excess adipose tissue. In table 5 the average weight in water of the low specific gravity group was 9.4 pounds, corresponding to a specific gravity value of 1.056. The corresponding values for the high specific gravity group were 11.1 and 1.081. The difference in weight in air between the two groups is 27.3 pounds.

On the assumption that a loss of 27.3 pounds of body weight in air is associated with a gain of weight in water of 1.7 pounds (11.1—9.4), the specific gravity of the low group following this loss of weight will be raised from an initial value of 1.056 to 1.081.

Thus, for every pound of weight lost the weight of the body in water is increased 0.062 pound (1.7 ÷ 27.3). The specific gravity of the reduced tissues is therefore 0.94 (1 ÷ 1.062), or a value in accord with the specific gravity of adipose tissue.

The average difference in thoracic and abdominal measurements of 5.8 and 3.7 inches for the high and low groups respectively suggests that excess adipose tissue accounts essentially for the difference in values for specific gravity of the two groups.

Individual Loss in Weight (table 3).—A man placed on a restricted diet and engaging in systematic exercise

lost 19.5 pounds over a period of seven months. The net weight in water increased from 10.8 pounds to 12.1 pounds, although the corresponding weight in air decreased from 202.5 pounds to 183.0 pounds. Thus, for every pound of weight lost in air the weight in water increased 0.067 pound ($1.3 \div 19.5$). The specific gravity of the reduced tissue is therefore 0.937 ($1.000 \div 1.067$), or a value again in accord with the specific gravity of neutral fat.

The reduction in abdominal girth further suggests that the eliminated tissue was chiefly fat.

Specific Gravity and Composition of the Body.—Of all the constituents of the tissues of the body, fat and bone appear to be the chief determinants of the ultimate

on the specific gravity of blood and various other tissues according to Vierordt⁴ and Nadeshdin.⁵

With reference to the specific gravity of blood, eighty-one determinations made according to the method of Barbour and Hamilton on eighteen of the ninety-nine subjects reported on in this paper gave an average in agreement with the data of Stern¹ of 1.060, standard deviation 0.002.

The percentage of skeletal weight in relation to the body as a whole exclusive of excess adipose tissue may not be expected to vary more than 4 units. Corresponding to this variation of 4 units in the percentage of body weight attributed to bone is a fluctuation of specific gravity of 13 units (table 6).

TABLE 4—Specific Gravity in Relation to Weight, Age, Height and Measurements of Thoracic and Abdominal Circumference

Specific Gravity	Number of Men	Average Weight		Range, Pounds	Average Age	Average Height		Average Circumference				Average Difference, Inches	Difference, Range
		Pounds	Kg			Inches	Cm	Chest		Abdomen			
								Inches	Cm.	Inches	Cm		
1 020-1 029	2	233	105 9	221-245	34	68 9	175 0	41 5	105 4	41 6	105 7	-0 1	-0 75 0 50
1 030-1 039	2	187	85 0	174-200	48	71 0	180 3	36 7	93 2	35 9	91 2	0 9	0 75-1 00
1 040-1 049	4	166	75 4	145-184	31	66 9	169 9	38 0	96 5	33 7	85 6	4 2	3 00 5 25
1 050-1 059	20	171	77 7	126-208	33	69 3	176 0	37 2	94 5	33 0	83 8	4 2	1 00 7 25
1 060-1 069	23	158	71 8	131-202	24	68 1	173 0	35 6	90 4	30 3	77 0	5 2	3 25 7 00
1 070-1 079	27	153	69 5	131-199	26	69 4	176 3	35 7	90 7	30 0	76 2	5 6	2 50 8 50
1 080-1 089	14	148	67 3	130-164	24	69 4	176 3	35 7	90 7	29 7	75 4	6 1	2 75 7 75
1 090-1 099	7	140	63 5	125-163	23	69 9	177 5	35 5	90 2	28 6	72 6	6 9	5 25-8 25

TABLE 5—High, Intermediate and Low Specific Gravity Group Values in Relation to Weight and Circumferential Measurements

Number of Men	Average Specific Gravity	Range	Average Weight		Average Circumference				Difference, Inches	Average Height	
			Pounds	Kg.	Chest		Abdomen			Inches	Cm
					Inches	Cm	Inches	Cm.			
38	1 081	1 075 1 097	148 7	67 6	35 3	89 7	29 6	75 2	5 7	69 7	177 0
33	1 066	1 060-1 074	156 6	71 2	35 8	90 9	30 4	77 2	5 4	68 3	173 5
28	1 056	1 021 1 059	176 0	80 0	37 6	95 5	33 9	86 1	3 7	69 0	175 3

TABLE 6—Body Composition, Showing the Effect of Variations in the Percentage of Bone and of Fat on Specific Gravity

	Percentage of Bone (10)				Percentage of Bone (14)				Variation in Fat Content			
	Specific Gravity	Percentage	Weight, Pounds	Volume	Percentage	Weight, Pounds	Volume		Percentage	Weight, Pounds	Volume	
Bone salts *	3 0	5	10	3 3	7	14	4 66		5	7 0	2 3	
Essential lipoids ..	0 94	10	20	21 2	10	20	21 20		10	14 0	14 9	
Tissue ..	1 06	85	170	160 4	83	166	156 60		85	119 0	112 2	
Totals			200	184 9		200	182 46					
									Lean man	140 0†	129 4	
										60 0†	63 5	
									Fat man	200 0‡	193 2	
Specific gravity of the body as a whole ...		1 082				1 095				† 1 082, ‡ 1 035		

* $\text{Ca}_2(\text{PO}_4)_3$ and $\text{Ca}(\text{CO}_3)_2$, approximately one half the weight of marrow free bone

† Excess adipose tissue.

values for specific gravity. In the comparison of the three groups (table 5) the difference between the average of the high and low values could best be attributed to a variation in adipose tissue. On the other hand, it is expected that the relative amount of bone may alter individual values within a limited range.

In table 6 hypothetical examples are presented to clarify the relationship between specific gravity and the composition of the body especially with respect to variation in the percentage of bone and fat.

For the purpose of our analysis the body may be viewed as comprising calcium salts representing 50 per cent of the weight of bone, essential or irreducible lipid substance, excess adipose tissue, and all other tissues of the body embracing chiefly muscle, organs, brain, skin and blood.

The specific gravity of the mineral substance of bone is of the order of 3.0, adipose tissue 0.94, and all other tissue 1.060. This last figure is an approximation based

on the specific gravity of blood and various other tissues subject to wide variations and a value of 30 per cent of the total body weight is not unreasonable for obese persons. If a lean man weighing 140 pounds, for example, accumulates 60 pounds of adipose tissue, the corporeal specific gravity will be lowered from 1.082 to 1.035, representing a difference of 46 units.

Since the density of the mass of tissue exclusive of bone and fat is probably constant for healthy men, the amount of fat appears to be the main factor affecting the specific gravity of a person.

Our concepts with regard to the composition of the body can be summarized by the accompanying diagrams. A, for example, the volume of a lean body mass weigh-

4 Vierordt, H Anatomische, physiologische und physikalische Daten und Tabellen, 3d rev ed, Jena, Gustav Fischer, 1906

5. Nadeshdin, W. A : Zur Untersuchung der Minderwertigkeit der Organe an Leichen, Deutsche Ztschr f d ges gerichtl Med. 18:426-431, 1932

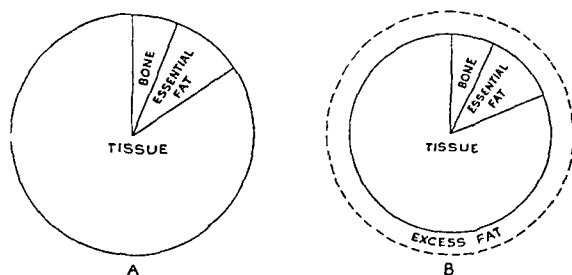
ing 200 pounds (90.9 Kg.), specific gravity 1.082, is divided into its components 1, 2 and 3.

In *B* the inner circle encompasses a mass similar to *A* in specific gravity and composition but differing in weight by 60 pounds (27.3 Kg.). The outer circle circumscribes an accumulation of 60 pounds (27.3 Kg.) of adipose tissue. The specific gravity of this 200 pound mass can be computed as 1.035, in contrast with the value of 1.082 for the mass represented by the inner circle.

The fundamental problem of the amount of variation of constituents 1 and 2 within the lean body mass remains to be determined. For the present the assumption is made that the percentage variation of these constituents based on body weight is small for lean men.

Excess fat therefore is viewed as the prime factor governing the level of specific gravity.

Precise measurements, however, of this excess fat will necessarily await a knowledge of the relative percentage variation of the weight of the skeleton in lean persons.



A represents the volume percentages of the three major specific gravity determinants of the body for a 200 pound, 90.9 Kg., lean man. The calculations were based on the following data: bone 10 per cent of body weight, specific gravity 1.60; essential fat 10 per cent, specific gravity 0.94; tissue 80 per cent, specific gravity 1.06. The volume percentages are therefore bone 6.8 per cent, essential fat 11.5 per cent, tissue volume 81.7 per cent. The specific gravity of this man would be 1.082. The solid inner circle in *B* represents the volume percentages for a 140 pound, 63.6 Kg., lean man. The volume percentages and specific gravity are the same as for the 200 pound (90.9 Kg.) lean man. The dotted outer circle represents the addition of 60 pounds of excess fat to the 140 pound lean man. The bone volume percentage is lowered to 4.5 per cent, the fat volume percentage is increased to 40.8 per cent and the tissue volume is reduced to 54.7 per cent in this man. Thus the specific gravity of the body is reduced to 1.035.

Of the anthropometric measurements, the chest diameters and height are expected to modify the values for specific gravity in persons possessing the same degree of obesity.

CONCLUSIONS

1. The fundamental biologic characteristic of corporeal density can be accurately measured usually within 0.004 unit by the method of hydrostatic weighing, provided a correction is made for the air in the lungs.
2. Values of specific gravity for healthy men ranging in age between 20 and 40 fall between 1.021 and 1.097.
3. Low values for specific gravity indicate obesity and, conversely, high values denote leanness.
4. Individual loss in weight through exercise and a restricted diet is associated with an increase in specific gravity.
5. Difference in the circumferential measurements of chest and abdomen serve as a criterion of obesity and can be correlated with specific gravity.
6. Variation in the percentage of bone in relation to body weight, excluding excess fat, is not expected to produce deviation of more than 0.013 units in comparable values.

THE SPECIFIC GRAVITY OF HEALTHY MEN

BODY WEIGHT ÷ VOLUME AND OTHER PHYSICAL CHARACTERISTICS OF EXCEPTIONAL ATHLETES AND OF NAVAL PERSONNEL

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In the preceding paper Behnke, Feen and Welham¹ have emphasized the value of the specific gravity of the body as a whole as an index of obesity. In their investigations a high value of 1.081 was associated with an average weight of 148.7 pounds (67.6 Kg.), while the corresponding weight for a group having an average low value of 1.056 was 176 pounds (80 Kg.).

If obesity and not weight per se is the chief factor tending to produce low values for specific gravity, then conversely a group of heavy but lean men should possess a high average value for specific gravity.

It was of considerable interest, therefore, to make a study of professional football players, the majority of whom had been selected for "all American" football teams. Essentially it was found that, although the average weight of these men was 200 pounds (90.9 Kg.), the average specific gravity reached the high value of 1.080. For comparison with these data and those recorded in the preceding paper, additional measurements were made on seventy-five naval men.

According to standard height-weight tables the majority of the football players could be classified as unfit for military service and as not qualified as risks for first class insurance by reason of overweight. The data presented in this paper therefore support the concept that specific gravity or weight of tissue per unit volume gives a true index of proper weight and not the standard tables which interpret weight in relation to height.

These findings together with accurate measurements of thoracic and abdominal circumferences and diameters provide information as to the physical characteristics associated with rugged physique and unusual fitness.

METHODS EMPLOYED

The technic used to measure specific gravity has been described in the preceding paper.¹ The body weight both in air and in water was accurately recorded to within 30 Gm. Measurements were made on the athletes following a morning "workout" and prior to eating. Similar data were recorded on naval personnel usually in the mid morning.

The chest diameters, anteroposterior and lateral, were taken with broad branched calipers at the level of the nipple line and recorded at the mean between inspiration and expiration in accordance with instructions from Dr. Aleš Hrdlička. For these measurements the subjects stood relaxed in the manner indicated in figure 2-A, elbows held at an angle of 45 degrees from the body, and forearms and hands held in a position of dependent flexion.

The material in this article should be construed only as the personal opinion of the writers and not as representing the opinion of the Navy Department officially.

1. Behnke, A. R., Jr.; Feen, B. G., and Welham, W. C.: The Specific Gravity of Healthy Men, this issue, p. 495

The body height was recorded with the subject standing erect, his back in contact with a vertical meter stick scale along which a wide sliding prong was used to touch the vertex of the head.

The circumference of the chest and of the abdomen was measured by means of a shellacked length of linen tape graduated in millimeters. For these measurements

as 200 pounds (90.9 Kg.), height as 72 inches (182.9 cm.), age as 25 years, circumference of the chest as 40 inches (101.6 cm.) and of the abdomen as 33 inches (83.8 cm.). As the weight increases in this group, values for specific gravity tend to decrease.

In table 2 corresponding data are presented from measurements obtained on seventy-five men in the naval

TABLE 1—Professional Football Players. Specific Gravity in Relation to Weight, Age, Height and Measurements of Thoracic and Abdominal Circumference, Chest Diameter, Residual Air and Vital Capacity

Subject	Specific Gravity	Weight		Height		Age	Vital Capacity, Liters	Circumference				Chest Diameter				Residual Air, Liters
		Lb	Kg	In	Cm			Chest		Abdomen		A. P.		Lat.		
								In	Cm	In	Cm	In	Cm	In	Cm	
1	1.097	181.0	82.3	72.1	183.1	22	5.650	37.3	94.8	30.4	77.3	9.5	24.2	12.3	31.3	1.562
2	1.095	185.7	84.4	69.0	175.3	22	6.400	39.1	99.4	31.2	79.3	9.3	23.6	12.2	31.0	1.402
3	1.095	194.7	88.5	72.0	181.9	24	6.600	39.2	99.7	30.7	78.0	9.4	23.8	12.4	31.4	1.500
4	1.094	183.3	83.3	69.2	175.8	24	6.625	38.9	97.9	32.0	81.2	9.2	23.3	12.9	32.9	1.415
5	1.094	190.3	86.5	72.0	182.8	23	6.500	40.2	102.2	30.2	76.7	10.0	25.3	13.1	33.2	1.560
6	1.094	170.2	77.4	69.2	175.7	27	5.600	36.4	92.4	31.2	79.3	8.5	21.5	12.1	30.8	1.438
7	1.091	192.0	87.3	72.7	184.8	24	6.010	39.8	101.0	32.0	81.2	10.0	25.4	12.3	31.2	1.570
8	1.091	183.5	83.4	73.1	185.7	24	6.600	40.1	102.0	30.5	77.5	9.0	23.0	13.9	35.3	1.792
9	1.088	188.2	85.5	72.6	184.4	28	5.320	38.4	97.6	31.4	79.7	9.1	23.2	12.3	31.3	1.339
10	1.088	189.3	86.1	72.3	183.7	31	6.000	38.8	98.5	30.8	78.2	9.2	23.4	12.6	32.1	1.341
11	1.086	205.7	93.5	72.6	184.5	22	6.300	41.3	105.0	34.9	88.8	9.6	24.4	13.7	34.9	1.930
12	1.085	187.7	85.3	73.5	187.6	24	5.310	37.7	95.8	31.0	83.8	9.6	24.5	11.8	30.0	1.301
13	1.084	179.6	81.7	70.5	179.2	25	5.370	39.1	99.4	31.5	80.0	9.2	23.5	13.0	33.0	1.453
14	1.081	220.4	100.2	75.0	190.4	23	6.800	39.4	100.0	33.0	83.9	11.4	29.0	12.4	31.4	1.353
15	1.080	189.9	86.3	68.7	174.4	24	5.700	40.5	102.8	31.5	80.0	10.1	25.7	14.0	35.6	1.330
16	1.080	196.2	89.2	73.2	185.9	25	6.550	40.1	101.8	32.1	81.5	9.5	24.2	13.6	34.5	1.593
17	1.080	209.8	95.4	74.7	189.8	27	6.600	40.9	104.0	34.8	88.5	11.4	29.0	12.3	31.2	1.560
18	1.078	194.4	88.4	69.1	175.6	25	5.600	39.9	101.4	33.3	84.7	10.3	26.3	12.2	31.0	1.187
19	1.071	194.3	88.3	72.1	183.1	29	5.400	40.5	102.9	33.6	85.3	9.6	24.5	13.3	33.9	1.284
20	1.066	217.1	98.7	72.4	183.9	25	5.620	40.1	102.0	36.4	92.5	10.1	25.7	13.2	33.5	1.429
21	1.064	210.6	95.7	72.6	184.5	27	4.500	40.1	101.8	34.7	88.1	10.3	26.3	12.2	31.1	1.388
22	1.064	259.5	117.9	75.3	191.2	25	7.230	45.9	116.5	38.9	98.8	12.1	30.7	15.2	38.6	1.665
23	1.060	217.2	98.7	74.0	188.0	29	4.660	40.9	104.0	34.0	86.3	9.8	24.8	13.4	34.0	1.226
24	1.051	223.0	101.4	73.0	185.5	25	5.940	41.6	105.6	36.0	91.5	10.1	25.6	13.5	34.2	1.488
25	1.051	251.2	114.2	71.8	182.5	27	4.950	44.5	113.0	38.5	97.9	12.3	31.3	14.5	36.9	1.700
Average	1.080	200.6	91.2	72.1	183.1	25.2	5.931	40.0	101.6	33.1	84.1	9.9	25.1	13.0	33.0	1.444

TABLE 2—Naval Personnel. Specific Gravity in Relation to Weight, Age, Height and Measurements of Thoracic and Abdominal Circumference, Chest Diameter, Residual Air and Vital Capacity

Specific Gravity	No Men	Average Weight		Range, Lb	Age	Average Height		Average Circumference				Difference, In	Difference Range, In	Chest Diameters				Average Residual Air, Liter	Residual Air, Range	Average Vital Capacity, Liters
		Lb	Kg			In	Cm	Chest		Abdomen				A P		Lateral				
								In	Cm	In	Cm			In	Cm	In	Cm			
1.030-1.039	1	183.5	83.4		30	71.0	180.3	37.8	96.0	33.0	83.8	4.8		9.5	24.2	12.7	32.2	1.260		4.910
1.040-1.049	1	159.8	72.6		36	67.6	171.7	36.6	91.0	32.4	82.3	4.2		9.3	23.6	12.2	31.0	1.047		4.640
1.050-1.059	11	172.4	78.4	129-216	31	68.0	172.7	37.7	95.8	33.2	84.3	4.5	0.8-8.3	9.7	24.6	12.4	31.5	1.375	1.200-1.357	5.415
1.060-1.069	18	163.2	75.1	123-180	30	68.4	173.7	36.3	92.2	31.0	78.7	5.3	2.7-7.7	8.8	22.3	11.9	30.2	1.437	0.656-6.234	4.592
1.070-1.079	14	158.3	71.9	143-171	24	67.6	171.7	36.5	92.7	30.2	76.7	5.3	5.0-7.4	8.8	22.3	12.0	30.5	1.496	1.000-2.094	4.963
1.080-1.089	16	156.3	71.0	132-197	25	69.0	175.2	36.5	92.7	30.0	75.9	6.5	3.5-9.3	8.9	22.6	11.7	29.7	1.603	1.177-2.147	5.132
1.090-1.099	14	154.0	70.0	122-176	23	70.2	178.3	36.0	91.4	28.8	73.1	7.3	4.4-10.0	8.6	21.8	11.9	30.2	1.663	1.340-2.185	4.982

TABLE 3—High, Intermediate and Low Specific Gravity Group Values in Relation to Weight and Circumferential Measurements

No Men	Average Specific Gravity	Range	Average Weight		Circumference				Differ- ence, In	Average Height	
			Lb	Kg	Chest		Abdomen			In	Cm
					In	Cm	In	Cm			
Naval Personnel											
13	1.051	1.035-1.057	172.3	78.6	37.6	95.5	32.1	81.1	4.5	68.2	173.2
24	1.066	1.060-1.074	156.9	71.3	36.1	91.7	30.6	77.7	5.5	68.5	174.0
35	1.066	1.075-1.096	166.9	71.3	36.5	92.7	29.7	75.4	6.8	69.4	176.1
Trained Athletes (Professional Football Players)											
25	1.080	1.051-1.097	200.6	91.2	40.0	101.6	33.1	84.1	6.9	72.1	183.1

the subject stood erect and held his arms fully extended upward, the palmar areas of the hands in contact (fig 2B). This maneuver reduced to a minimum the influence of the pectoral musculature and fat.

The residual volume of the lungs was determined on all subjects by the helium dilution method¹.

RESULTS OBTAINED

In table 1 are listed the values obtained on the twenty-five exceptional athletes. The averages in whole numbers list specific gravity as 1.080, weight

as 200 pounds (90.9 Kg.), height as 72 inches (182.9 cm.), age as 25 years, circumference of the chest as 40 inches (101.6 cm.) and of the abdomen as 33 inches (83.8 cm.). As the weight increases in this group, values for specific gravity tend to decrease.

In table 2 corresponding data are presented from measurements obtained on seventy-five men in the naval service, mainly in the age group of 20 to 35 years. A progressive increase in the difference between thoracic and abdominal girth is associated with an increase in specific gravity. The inverse relationship between weight and specific gravity is also apparent.

In table 3 the averages are given for naval personnel divided into three groups on the basis of high, middle and low values for specific gravity, i. e. above 1.074, 1.060 and 1.074 inclusive and below 1.060 respectively. For comparison, corresponding data are listed for the athletes.

The values for residual air showed the greatest range of variation in naval personnel compared with similar values for athletes. An average figure of 1,500 cc. for both groups is in close agreement with previous determinations.¹

CHEST AND ABDOMINAL MEASUREMENTS

The difference in circumference between chest and abdomen of 6.9 inches (17.5 cm.) for the athlete and of 6.8 inches (17.3 cm.) for the lean naval man is

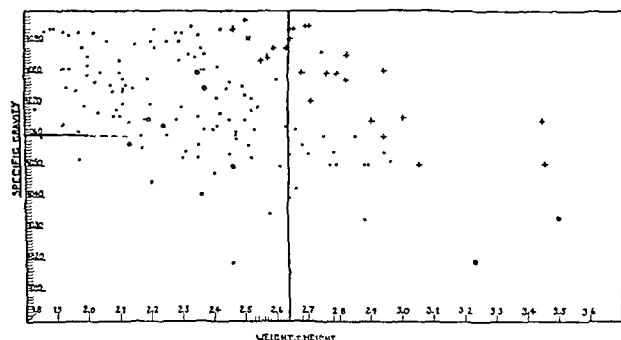


Fig 1—The specific gravity of each subject is plotted on the ordinate against the ratio of weight to height for that subject on the abscissas. The dotted points represent values for naval personnel, and the circled dots represent two subjects falling on the same point. The crosses represent values for the athletes studied. The vertical line at a weight to height ratio of 2.65 represents the upper limit of the ratio allowable in selection of men for military duty. For the age group represented by this series, those to the right of the vertical line are considered not qualified as good risks for first class insurance by reason of overweight.

in accord with the conclusions that these types of men possess minimal adipose tissue. For the group having a low specific gravity of 1.051 (table 3) the corresponding difference is 4.5 inches (11.4 cm.).

Although individual variation in the circumferential difference is large, the group values correlate closely with specific gravity. Since these measurements are easy to obtain, their difference may serve as a good index of relative obesity when groups of individuals are compared.

The mean of the thoracic diameters for the athletes is 1 inch (2.54 cm.) greater than the corresponding measurement for the naval group possessing a similar average value for specific gravity.

RESIDUAL AIR AND VITAL CAPACITY

A value of 1,450 cc.¹ can be used as a group average for residual air volume without appreciably altering the results.

The values for vital capacity in athletes are considerably higher than the corresponding value obtained on naval personnel. Apparently there is no relationship between specific gravity and vital capacity.

COMMENT

The data obtained on seventy-five naval men in the present investigation are in accord with the previous measurements obtained on a similar group of ninety-nine men¹ as shown in the tabular summaries.

Weight in Relation to Specific Gravity.—With reference to the group of athletes it is observed that an average weight of 200 pounds (90.9 Kg.) is associated with a high value for specific gravity of 1.080, and that in even six of the heaviest men of the group, average weight 230 pounds (104.5 Kg.), the average value for specific gravity was 1.059. This fact supports the concept that adipose tissue and not weight per se is the governing factor determining specific gravity.

Among naval personnel¹ an average value for specific gravity of 1.081, and in the group listed in table 3 of 1.086, was associated with weights of 149 and 157

pounds respectively. The chief physical difference between the exceptional athlete and naval personnel possessing similar tissue densities is approximately 50 pounds (22.7 Kg.) of body mass.

Stature.—Associated with the increase of weight is a taller stature of 2 to 3 inches for the athlete compared with the man in the military service. Whether or not this characteristic means that skeletal size in relation to body mass is an important factor that enables the athlete to maintain a high corporeal density despite the increased weight cannot be determined from the anthropometric data.

Specific Gravity in Relation to Height-Weight Tables.—The criterion as to the proper weight of an individual is based on a relationship between stature and absolute body weight, modified by age. Numerous sturdy persons, however, exceed by 15 per cent the weight values recorded as average for a given height. Rejections for military service, for example, on the basis of overweight might serve to eliminate outstanding athletes.

A more valid basis than standard height-weight tables for an estimate whether or not an individual is obese is not absolute weight but rather specific weight; that is, weight in relation to unit volume of tissue.

The plotted data (fig. 1) show the relationship between specific gravity and weight per unit of height.

If an arbitrary value for specific gravity of 1.060 is taken as the dividing line separating qualified men from those not qualified because of excessive fat, two of the twenty-five athletes would be eliminated.

On the basis of the standard height-weight tables used by insurance companies and in the military ser-

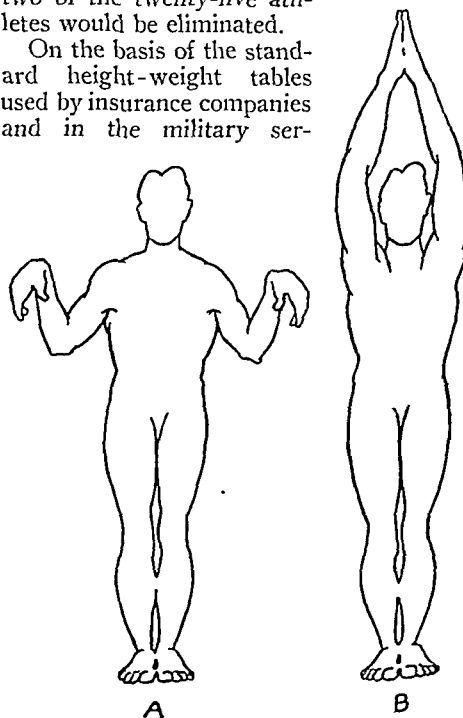


Fig 2—A, represents the position assumed by the subject for measurements of anteroposterior and lateral chest diameter. The measurements were taken at the level of the nipple line as described in the text. B represents the position assumed for measurements of the circumference of the chest and abdomen. The latter measurements were taken at the level of the umbilicus.

vice, seventeen of the twenty-five athletes could be considered as not physically qualified for military duty or first class insurance risk, if an allowance of 15 per cent above the average values in the tables is considered as the upper limit.

Of the seventeen rejected "all-American" football players, eleven fall into the group possessing high corporeal specific gravity. According to our classification these eleven men are in prime physical condition if the absence of excessive fat is a criterion of fitness. The type of physical exertion, moreover, that these men are called on to make is proof of their sturdy physique, estimated in terms of speed, agility and endurance.

We propose, therefore, the classification of men as overweight on the basis of specific gravity of the body mass, using a tentative dividing line of 1.060 for the elimination of the obese.

This division, following a line parallel to the abscissas (fig. 1), is diametrically opposed to a division based on height-weight tables, which follow a line at right angles to the abscissas (fig. 1).

THE SURGICAL APPROACH TO HYPERTENSION

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Hypertension is a common symptom of several fundamentally different disorders. Its medical treatment in the past has consisted of rest, the use of sedatives, vasodilators and toxic depressants and psychoanalytic sessions.¹ It can be safely stated that none of these measures have ever cured or arrested the progress of hypertension, although their temporary, palliative value, especially in the early stages, cannot be questioned. Recently a depressor substance has been isolated from the normal kidney and used in lowering the blood pressure of animals and of man.² It is too early to judge the merits of this extract in combating hypertension. The fact remains that cardiovascular-renal disease, with hypertension as its dominant symptom, stands first in the mortality list today and is responsible for more than half a million deaths annually in the United States. After the age of 45 the death rate from this condition is four times that from cancer and twenty times that from either tuberculosis or diabetes³ (fig. 1).

With the recognition of entities such as tumor of the chromaffin system⁴ and unilateral renal disease producing hypertension,⁵ certain surgical indications have been crystallized and have received general acceptance. There remains, however, the overwhelming majority of hypertensive patients about whose classification and treatment there is much disagreement. The

early surgical efforts of Italian surgeons, followed in this country by the pioneer work of Adson, Peet, Heuer and other investigators, have given a great impetus to progress in the surgical therapy of hypertension.⁶ With increasing experience and frequent exchange of ideas, certain fundamental questions regarding selection of cases and operative technic have become standardized in several clinics. It is our purpose here to describe our classification, preoperative study, indications and technic and the early and late results.

A group study of hypertensive patients is essential, uniting ophthalmologist, pathologist, urologist, internist and surgeon for the common purpose of determining the optimal course of management. Such a cooperative effort, in which all participants speak the same language and in which no group tries to dominate the other or rationalize the other's undertakings, saves many a patient from useless operations and results in an unbiased follow-up study of surgical results.

PATIENTS STUDIED

The number of patients treated is small but the study covers the period from 1932 to 1940, with no patient included who was treated after December 1940, so that the minimal period of follow-up study is six months (table 1). It is obvious that with increasing experience, with the use of routine pyelograms and, if necessary, differential tests of renal function the diagnosis of so-called essential hypertension will yield to a more specific one. Thus, all the patients with this diagnosis were thought primarily to have nonrenal, essential hypertension with no or insignificant urinary abnormal-

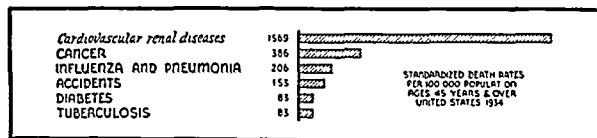


Fig. 1—Mortality statistics taken from the data of the Metropolitan Life Insurance Company (from Dublin, L. I., and Lotka, A. J.: Twenty-Five Years of Health Progress, New York, Metropolitan Life Insurance Company, 1937)

ities. The history, the renal biopsy specimens taken at operation and the postoperative course led to a recognition of the true nature of the disease. Atrophic pyelonephritis,⁷ lupus kidney,⁷ congenital hypoplastic kidney⁸ and adrenal medullary tumor⁴ are becoming recognized causes of chronic diastolic hypertension. We are impressed with the frequency with which toxemia of pregnancy and pyelonephritis of pregnancy also figure in the history of hypertensive women.⁹ The pituitary origin of some hypertension is still debatable.¹⁰ The emphasis on renal disease in essential hypertension in human beings does not mean, however, that the con-

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Each of the references cited in this article was chosen for containing an up-to-date review of its subject

Because of lack of space, a report of illustrative cases has been omitted. The complete article will appear in the authors' reprints

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stitutional, hereditary factors and the neurogenic and endocrine types of hypertension do not play an important part. We have used a modification of Schroeder and Steele's¹¹ classification for a working basis (table 2). This classification well represents our present state of knowledge. In an attempt to assign to these various factors a proper relationship, Edward Weiss¹ has con-

(table 4). Most patients fall into one of these groups; a given patient may have severely progressive hypertension and pass from group 1 to group 4; in other patients the disease may be stationary for many years.

SELECTION OF PATIENTS FOR OPERATION
(TABLE 5)

From the study of reports in the literature and our own results, we feel that patients with grade 4 hypertension (malignant nephrosclerosis) are not benefited by any of our operative procedures. True enough, for these patients, who are often young and hopelessly lost, any attempt which carries a low surgical mortality is justifiable. Our records of 8 such patients would indicate that despite subjective improvement lasting for a variable period no objective relief has been gained. Interestingly enough, the renal extract of Page⁶ gave subjective and objective relief for similar patients as long as the substance was administered. When the material becomes available there may be something that can be done for such patients. In groups 2 and 3 patients are greatly improved if complete splanchnic nerve section is performed, whereas in group 1 complete cures have been observed. Caution is necessary to prevent confusing the early hypertension of young persons in group 1 with arteriosclerotic hypertension of patients in the fifties. The latter have a high pulse pressure and may have a high systolic pressure, but their diastolic pressure is frequently around 100

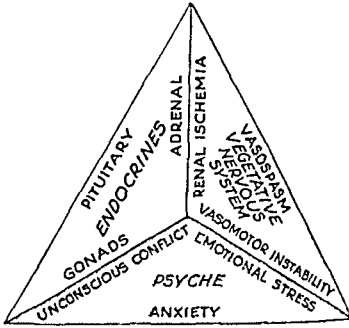


Fig. 2.—Pathogenesis of hypertension (redrawn from Weiss¹). The base of the pyramid is made up of constitutional and hereditary factors.

mm. of mercury. This frequently occurring type of hypertension, due to an atheromatous aorta, is not within the scope of our discussion.

SURGICAL PROCEDURES

Besides the stage of the disease in which the operation is undertaken, the technical procedure is an important factor in the results obtained. In our clinic the following procedures have been used:

1. *Supradiaphragmatic Splanchnic Nerve Section.*—In this operation one interrupts the splanchnic nerves above the diaphragm and excises the ninth to the twelfth sympathetic ganglions. The operation was originally described by Pieri¹⁴ and was performed in 1932 by one of us¹⁵ to increase the insulin sensitivity of a patient with juvenile diabetes and was popularized by Peet.¹⁶ The operation does not permit the examination of the kidney and the adrenal gland and cannot interrupt the lumbar sympathetic nerves, whose part in the mechanism of postoperative relief will be discussed.

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TABLE 1.—Data on Surgically Treated Patients with Hypertension (June 1, 1940)

Diagnosis	Number of Patients
Atrophic pyelonephritis . . .	2
Lupus kidney . . .	1
Congenital hypoplastic kidney . . .	3
Eclamptic kidney	3
Adrenal medullary tumor . . .	2
Benign nephrosclerosis . . .	25
Malignant nephrosclerosis . . .	8
Total	44

structed a diagram which illustrates them (fig. 2). This diagram simply means that the presence in a person of one factor, such as renal ischemia following eclampsia, with a noncontributory family history and no constitutional factors, may not lead to hypertension, whereas in another person a small emotional, environmental or toxic stress may bring on hypertension because of the inherent vascular reactivity of the patient or because of his glandular makeup.

THE PREOPERATIVE STUDY

The purpose of preoperative study was (1) to establish criteria for the selection of patients for operation and (2) to provide a yardstick with which the benefit derived from the operation could be measured objectively. The data were summarized on one chart and the examinations repeated every two to three months after the operation (table 3). On the basis of these

TABLE 2.—Classification of Arterial Hypertension²

Clinical Lesions			
Renal			
A. Parenchymal	B. Vascular	Nervous	Endocrine
Glomerulonephritis	Arteriosclerosis	Brain tumor giving rise to increased intra cranial pressure	Pituitary basophilism
Pyelonephritis	Buerger's disease	Disease of the brain stem (bulbar poliomyelitis)	Adrenal tumor (of medulla and cortex)
Urinary obstruction	Periarteritis nodosa	Psychic disturbance	Hyperthyroidism
Renal tumor	Renal infarct		Ovarian tumor
Amyloid kidney	Lupus erythematosus		Menopause
Polycystic kidney	Lead poisoning		Obesity
Hypoplastic kidney	Coarctation of the aorta		
Eclamptic kidney			

* Modified from Schroeder and Steele.¹¹

studies it was possible to grade most patients readily into one of the four groups of Wagener and Keith.¹² A similar grouping has been adopted by Palmer and his associates¹³ at the Massachusetts General Hospital

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2. *Infradiaphragmatic Splanchnic Nerve Section.*—The splanchnic nerves are severed below the diaphragm, together with a small slice of the celiac plexus. In addition, the first and second lumbar ganglions are removed. The procedure described by Pereira¹⁷ has been modified by Craig.¹⁸ We have used Flothow's¹⁹ muscle-splitting anterolateral approach to the lumbar sympathetic nerve.

enopathy, the identification of all the splanchnic trunks may be difficult. Finally, branches that are given off toward the periaortic plexus from the splanchnic nerves and the sympathetic chain above the diaphragm are missed by this operation.

3. *Transdiaphragmatic Splanchnic Nerve Section.*—This operation combines the advantages and eliminates

TABLE 3.—Sample Form for Preoperative Study of Hypertensive Patients

Name: E. L.	Age: 26	Sex: Male	Race: White
Present complaint: High blood pressure for 3 weeks (found during physical examination); no symptoms		History: No history of nephritis, facial or ankle edema or hematuria; scarlet fever 1931; no familial incidence of hypertension	
Vascular Reactivity		Glomerular filtration rate, 120.4 cc. per minute	
12 hour blood pressures (during bed rest):		Total renal blood flow, 670 cc. per minute	
7 a. m. 186/134	1 p. m. 180/124	Urinary content of albumin, 0 mg. per 100 cc.	
8 a. m. 170/112	2 p. m. 178/120	Microscopic study of urine:	
9 a. m. 190/120	3 p. m. 190/110	Casts per high power field, 0	
10 a. m. 184/118	4 p. m. 180/120	Red blood cells per high power field, 0	
11 a. m. 170/110	5 p. m. 190/122	White blood cells per high power field, 0	
12 Noon 170/112	6 p. m. 190/120	Heart size:	
	7 p. m. 188/118	Cardiothoracic index, 0.5	
Sodium amytal (oral dose), 0.6 Gm. (bed rest):		Electrocardiogram:	
Lowest blood pressure before, 178/124		(1) Sinus arrhythmia	
Lowest blood pressure after, 130/95		(2) Small Q ₂ and Q ₃ present	
Pentothal sodium (intravenous dose) 2 Gm.:		(3) T ₁ low, flat	
Lowest blood pressure before, 175/120		(4) T ₂ low, diaphasic	
Lowest blood pressure after, 130/90		(5) P ₂ high, sharp	
Sodium nitrite (oral) dose ½ grain (0.03 Gm.) hourly for 6 doses:		Fundoscopic Examination:	
Lowest blood pressure before, 236/135		Photographs of the fundi taken 10/15/40; there is some spasm of retinal arterioles, with slight sclerosis but no exudate or papilledema	
Lowest blood pressure after, 180/118		Spinal Fluid Pressure, ~ mm.	
Cold stimulus (method of Hines):		Pyelogram, normal:	
Lowest blood pressure before, 180/118		Comment: Hypertensive cardiovascular renal disease of Grade 2; good renal function and good fall in blood pressure with sedation	
Highest blood pressure after, 205/132			
Systolic elevation, 28 mm.			
Diastolic elevation, 14 mm.			
Time to return 4 minutes			
Renal Function			
Urea clearance, 45.7 cc. per minute			
Phenolsulfonphthalein return (15 minutes), 30 per cent			
Concentration test (Lashmet-Newburgh):			
Specific Gravity		Volume	
1.029		690 cc.	
1.031		50 cc.	
1.031		20 cc.	

TABLE 4.—The Grading of Essential Hypertension *

	Early or Mild, Grade 1	Moderate, Grade 2	Late Benign, Grade 3	Malignant, Grade 4
Age.....	30 to 65	21 to 55	22 to 57	8 to 55
Symptoms.....	Early morning headaches, vertigo or no symptoms	No symptoms or early morning headaches, vertigo	Nervousness, headache, vertigo, nycturia, dyspnea on exertion	Nervousness, visual disturbance, severe headaches, muscle pains
Retinal changes.....	Minimal narrowing of arterioles or no changes	Arteriovenous compression, moderate sclerosis of arterioles	Recurrent angiospasm, arteriolar sclerosis; hemorrhages, exudates; no papilledema	As in grade 3; plus papilledema
Blood pressure.....	Systolic pressure 200 to 150; diastolic 120 to 100; occasionally normal at rest	Systolic 250 to 170; diastolic 130 to 100; lower at rest but never normal	Almost always over 170/110; fluctuates upward	Diastolic very high; fixed blood pressure
Heart.....	Minimal if any changes	Slight enlargement, left ventricular preponderance, good function	Enlarged; actual or impending congestive failure; sometimes angina	Congestive or anginal failure often present
Urine.....	Normal	No change or mild albuminuria and casts	Contains albumin, casts, often red cells	Albumin, casts, red cells
Renal function.....	All tests show normal function; urea clearance may be slightly decreased	Slight decrease; urea clearance 30 to 40 cc.	Impaired function; urea clearance 20 to 30 cc.	Poor function; urea clearance 7 to 20 cc.
Brain.....			Cerebral accidents occur	Cerebral accidents
Five year mortality, percentage	30	46	80	90

* Our data combined with those of Wagener and Keith and Palmer and Smithwick.

Regeneration of the splanchnic nerves, which was described in animals by Cuthbert and de Takats,¹⁵ is difficult to prevent after this operation. In obese patients or in those who have a retroperitoneal lymphad-

the disadvantages of the two previous operations. It is a complete resection of the major splanchnic nerve, removing it from the fifth dorsal root down to its entrance into the celiac ganglion. In addition the sympathetic ganglionated trunk is removed from the ninth dorsal to below the first or occasionally the second lumbar ganglion. In order to obtain this exposure, the diaphragm must be incised and sutured. Through this approach, the renal artery, pelvis, ureter, renal paren-

17. Pereira, A. de S.: *Nervi splanchnici; contribuição para o estudo de anatomia e cirurgia dos nervos esplanchnicos*, Porto, Portugal. Typographia Porto Medica, 1929.

18. Craig, W. M.: *Surgical Approach to and Resection of the Splanchnic Nerves for Relief of Hypertension and Abdominal Pain*, West. J. Surg. 42: 146, 1934.

19. Flothow, P. G.: *Anterior Extraperitoneal Approach to the Lumbar Sympathetic Nerves*, Am. J. Surg. 29: 23, 1935.

chyma and adrenal glands may be inspected and palpated. The operation has been described by Reginald Smithwick.²⁰

4. *Omental or Muscular Graft into the Kidney.*—After decapsulation and scarification of the kidney a 1 inch (2.5 cm.), deep incision is made along the whole

TABLE 5.—Contraindications to the Surgical Treatment of Hypertension

Grade 4 hypertension
Cardiac decompensation
Nitrogenous retention
Severe atheromatosis of larger vessels
Age over 50

convexity of the kidney and an omental flap or a pedicled muscle flap is sutured into the incision. The operation was first done in our clinic in 1936, and 5 cases were reported last year.²¹ Nine cases were reported by Bruger and Carter.²²

5. *Nephrectomy.*—This is done for unilateral renal disease associated with hypertension when there is no detectable impairment of function in the opposite kidney. One patient was available for study in the group.

6. *Renal Biopsy.*—A small slice (1.5 cm. long and 3 mm. thick) of renal cortex was removed during the transdiaphragmatic and infradiaphragmatic sympathectomies and during the renal grafts. A total of fifteen biopsies were performed, and their value will be discussed hereafter.

RESULTS

Thirty ^{22a} patients have adequate follow-up records, by which it is meant that they were reexamined by one or several of us at intervals of two to three months. There

TABLE 6.—The Surgical Approach to Hypertension as Influenced by Technic and by the Stage of Disease

Types of operation	Grades of Hypertension				Total	Average Duration of Follow-Up Study, Months
	1	2	3	4		
Suprardiaphragmatic	±—*	—	..	—	4	28
Infradiaphragmatic	±±	±—	—	—	15	56
Transdiaphragmatic	++	++	±	—	6	9
Renal graft.....	..	..	..	±—	5	34
Nephrectomy.....	..	++	..	—	2	9
Total.....	6	11	6	9	32	27

* +, good result: The blood pressure returned to normal or became stabilized at a much lower level. ±, little objective but considerable subjective improvement: The patient's symptoms were relieved. —, no result.

were 4 patients with suprardiaphragmatic, 15 with infradiaphragmatic and 5 with transdiaphragmatic splanchnic nerve section. Five had an omental or muscular graft

and 1 nephrectomy for hypertension. There was no surgical mortality. We believe that at least two readily recognizable factors influence results (table 6). One is the type of operation performed and the other the stage of the disease in which the operation is undertaken. Of the splanchnic nerve sections the supradiaphragmatic and the infradiaphragmatic operation yielded such doubtful results that they were discontinued. The transdiaphragmatic, total splanchnic nerve section has given us excellent results in patients with grade 1 and grade 2 hypertension and produced considerable subjective relief in 1 patient with grade 3 hypertension. In 1 patient with malignant nephrosclerosis it failed. Of the 5 patients with grade 4 hypertension in whom a renal graft has been undertaken, only 1, who has now been followed for five years, has had subjective relief. One patient who had nephrectomy for unilateral atrophic

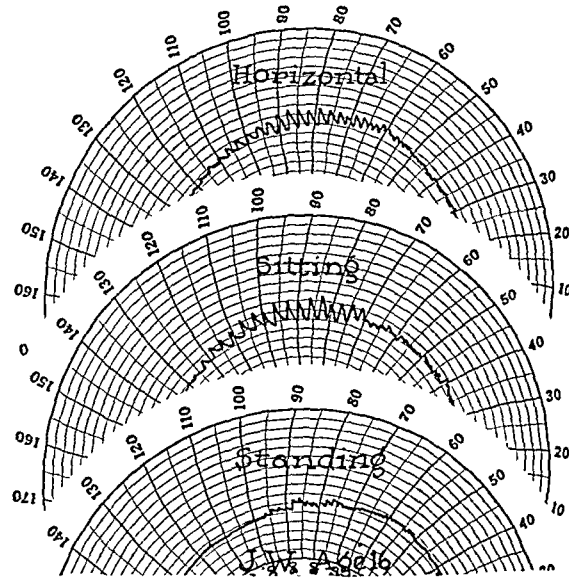


Fig. 3.—Postural hypotension three months after extensive splanchnic nerve section and lumbar sympathectomy. The pulse volume was small in the standing position; the blood pressure had dropped from 120 systolic and 75 diastolic to 95 systolic and 70 diastolic. For six weeks after the operation the blood pressure could not be obtained after the patient had stood five minutes.

pyelonephritis and 1 who had nephrectomy for congenital hypoplastic kidney had complete subjective and objective relief up to the time of this writing.

COMMENT

If one looks on diastolic hypertension as a malignant process progressing with a varied speed but with unpredictable periods of acceleration, an analogy with the surgical treatment of carcinoma readily presents itself. Just as in the case of cancer, methods may well be developed which would make surgical intervention unnecessary; the joint efforts of Tinsley Harrison and Irvine Page may do the same for the surgical treatment of hypertension.⁶ It is our feeling at present, however, that if the not too advanced ischemia of the kidney can be remedied by sympathectomy or vascular grafts the formation of the yet poorly understood pressor substances will be inhibited, so that substitution therapy with renal extracts will not be needed. That a gradual improvement of renal circulation occurs after splanchnic nerve section can be demonstrated by the slow fall in blood pressure and the improvement of urea clearance over a period of six to ten weeks which one observes in

20. Smithwick, R. H.: A Technique for Splanchnic Resection for Hypertension, *Surgery* 7: 1, 1940.
21. De Takats, Geza, and Scupham, G. W.: Revascularization of the Ischemic Kidney, *Arch. Surg.* 41: 1394 (Dec.) 1940.
22. Bruger, M., and Carter, R. F.: Nephro-Omentopexy and Nephromyxopexy in the Treatment of Arterial Hypertension, *Ann. Surg.* 113: 381, 1941.
22a. Since this paper was written an additional 10 patients have had a transdiaphragmatic splanchnic nerve section. With the exception of 2 patients in whom the operation was incomplete, the response to this procedure was equally satisfactory.

patients with grade 2 or grade 3 hypertension. In the earlier stages a relaxation of the spastic efferent arterioles could be demonstrated, as shown in a report by Grimson, Alving and Adams²³ and in some unpublished data from our institution, by means of the diodrast-inulin clearances.

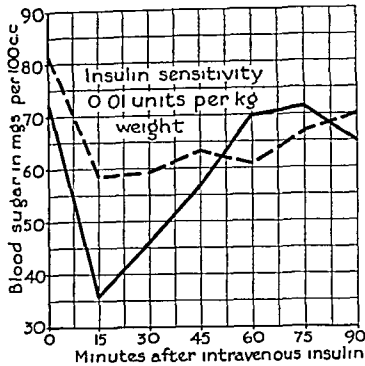


Fig. 4.—Increase in sensitivity to insulin following transdiaphragmatic splanchnic nerve section in R. L., a man aged 24 with grade 1 hypertension. Interrupted line, blood sugar curve before operation, and straight line, blood sugar curve six weeks after operation. The fall in blood sugar caused by insulin cannot release sufficient epinephrine to restore the blood sugar level as fast as could be done before the operation.

If patients avoid motionless standing for three to five minutes, they are unaware of this faulty adaptation to posture. It means that splanchnic vasoconstriction, which occurs normally on the assumption of the erect posture, is effectively interrupted. Effective circulating blood volume and the stroke volume of the heart are also reduced in the upright position. The patient then carries during the day and also during the night if he sleeps with the upper part of the body elevated²⁴ a lower pressure and thus relieves the blood vessels of the brain, heart, kidneys and extremities from excess strain.

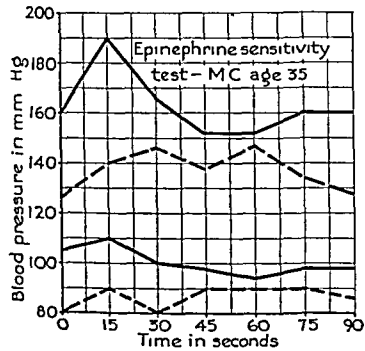


Fig. 5.—Sensitivity to epinephrine before and after splanchnic nerve section. Solid lines, before operation; interrupted lines, after operation

There is also a considerable symptomatic relief from headaches, dizziness and palpitation in some patients who show no reduction in the level of blood pressure. There has been a tendency to assume a nonspecific action of the operation, possibly a psychologic influence.²⁵

Experimental evidence by Heinbecker²⁶ indicates that the substance produced by renal ischemia increases the sensitivity of smooth muscle to epinephrine. Cuthbert and de Takats showed in 1933 that adrenal denervation diminishes the sensitivity of the animal to epinephrine.

It would seem that the relief from "nervous" symptoms, from the "inner tension" which all surgeons have observed after splanchnic nerve section, whether done for hypertension or diabetes, may well be considered due to adrenal denervation. Thus the emergency outpour of epinephrine, which is initiated by a fall in the blood sugar content, is inhibited by splanchnic nerve section (fig. 4); furthermore, the patient's sensitivity to epinephrine is decreased after the operation (fig. 5).

The different mechanisms which may bring about relief in hypertensive patients after splanchnic nerve section are listed in table 7.

The renal graft requires some discussion.²¹ It is difficult to see how closed or narrowed terminal arte-

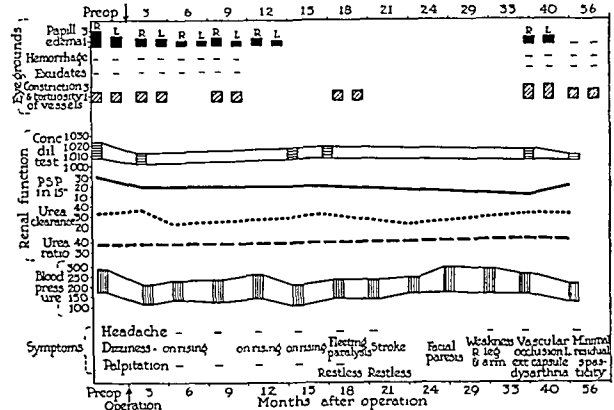


Fig. 6.—Effect of revascularization of the ischemic kidney. This is a five year follow up record of A. J., who belonged to group 4 at the time of operation. She does not have papilledema after five years, and tests of the renal function show it to be essentially unchanged except for the concentrating ability. She has residual spasticity from the several cerebral accidents but no subjective symptoms. The blood pressure (average of twelve hourly determinations) is somewhat lower than before operation. Generally speaking, the malignant nephrosclerosis has been arrested.

rioles of the kidney or how hyalinized glomeruli could be reopened and made to function by a vascular implant. But some observations suggest that this operation deserves a trial even on theoretic grounds. First,

TABLE 7.—Mechanism of Relief in Hypertensive Patients After Extensive Splanchnic Nerve Section

Actual lowering of blood pressure (diminution in size of heart and improvement in electrocardiogram)
Pronounced polyuria, diminished excretion of protein and improvement in renal function (immediate or gradual)
Postural hypotension with consecutive decrease in venous pressure and effective circulating blood volume; decrease in papilledema and improvement in cerebral circulation
Decrease in reflex nervous irritability due to adrenal denervation
Sensitivity to epinephrine diminished; sensitivity to insulin increased
Palpitation of heart and dizziness disappear even if basal blood pressure in horizontal position is unchanged

it could be shown that the grafted vascular supply is capable of reaching the tubules and improving their circulation.²⁷ Second, it has been well demonstrated by the work of Oliver²⁸ that glomerular function can be at least partially compensated for by hypertrophy and hyperplasia of the primary convoluted tubules; furthermore, the glomerular blood supply can be sidetracked by arteries going directly to the tubules. Finally, the

27. Weeks, D. M.; Steiner, A.; Mansfield, J. S., and Victor, J.: The Depressor Effect of Reno-Venopexy on Hypertension Due to Renal Ischemia, *J. Exper. Med.* 72: 345, 1940.
28. Oliver, J.: The Architecture of the Kidney in Chronic Bright's Disease, New York, Paul B. Hoeber, Inc., 1939.

postmortem records of Blackman²⁹ should be cited. He frequently observed atheromatous plaques at the origin of the renal artery in the kidneys of patients with essential hypertension. Such kidneys have a relatively intact terminal vascular bed and could be vascularized with more ease than a kidney with arteriolar sclerosis.

The exact indications for the vascular graft are not yet clear. It is our feeling that in cases of late atrophic pyelonephritis or of grade 3 essential hypertension, when splanchnic nerve section alone cannot bring about adequate revascularization of the kidney, this operation might be added to insure a maximal blood supply. The combined operation has kept a child of 8 with congenital hypoplasia of both kidneys and grade 4 hypertension alive and symptom free for more than two years and has kept another patient with grade 4 hypertension alive for more than six years in an essentially unchanged condition (fig. 6).

As indicated in the tabulation of results, we believe that the selection of the patient and the selection of the surgical technic are the two important factors in bringing about results. When all types of patients were operated on by an approach which did not permit complete splanchnic nerve section (Rytand and Holman³⁰), there was a 20 per cent surgical mortality and 27 per cent more of the patients died a year and a half after operation. Rytand and Holman's courageous attempt serves to reemphasize the limitations of surgical therapy. The work of Keith and Smithwick in establishing the grades of hypertension and the best technical procedure has been coordinated in this study to bring about optimal results. At present, at least, the total sympathectomy practiced by Grimson, Alving and Adams²³ seems unnecessarily radical but may become the operation of choice if the present operation will not maintain its efficiency in the five year follow-up records.

SUMMARY

1. Thirty patients with essential hypertension (benign and malignant nephrosclerosis) were subjected to operative procedures.

2. The hypertensive state was classified as early, moderate, marked and malignant, after the classification of Keith and his associates. It was noted that malignant hypertension is a contraindication to operation.

3. The surgical procedures used were the supradiaphragmatic, the infradiaphragmatic and the transdiaphragmatic splanchnic nerve section, the vascular implant to the kidney and nephrectomy. Of the splanchnic nerve sections, the transdiaphragmatic section of Smithwick produced the only real reductions of high blood pressure. The value and the place of the vascular implant to the kidney are still unclear. Nephrectomy in 1 case was successful.

4. No method has come to our attention so far which would check the progress of hypertension more effectively than surgical therapy. The selection of patients with early hypertension and the use of an improved technic seem to be two important factors in obtaining good results.

5. Outside the actual lowering of blood pressure, the gradual improvement of renal function, the postural hypotension and the decrease in reflex nervous irritability due to adrenal denervation constitute the mechanisms of the relief obtained.

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ABSTRACT OF DISCUSSION

DR. REGINALD H. SMITHWICK, Boston: Dr. de Takats and his collaborators have raised the question Does complete denervation of the splanchnic bed of hypertensive patients offer more in the way of persistent and significant lowering of blood pressure than does partial denervation of the splanchnic bed? The splanchnic bed is completely denervated when shortly after operation the blood pressure in the standing position completely disappears or falls to a level that is incompatible with this upright position. The splanchnic bed is partially denervated when after operation there is no significant difference between the blood pressure in the standing position as contrasted with the horizontal position. Sixty-six unselected patients had partial denervation of the splanchnic bed. There was a fairly equal representation in each stage of the disease. Significant and persistent lowering of blood pressure was obtained in 9.1 per cent of these patients. A series of 38 patients had had complete or near complete splanchnic denervation, as judged by significant fall in blood pressure in the upright position after operation. Seventy-one per cent of these have had significant and persistent lowering of the blood pressure during the period of observation. The majority of the good results or the highest percentage were in groups 1 and 2, 87 per cent. However, a very significant effect (60 per cent) has been noticed in group 3 and particularly in group 4 cases. The results in the latter group do not allow me to agree with Dr. de Takats' statement regarding malignant hypertension. I do not believe that malignant hypertension is necessarily a contraindication to surgery. My impression from this rather preliminary surgery of a very small group of patients followed for six months to two and a half years after operation is that radical denervation of the splanchnic bed has more to offer patients with hypertension than partial denervation of the splanchnic bed.

DR. CLAUDE BECK, Cleveland: Dr. de Takats deserves admiration for his well directed efforts to explore further the function of the autonomic nervous system in human hypertension. To the question as to whether or not our present surgical procedures for essential hypertension are curative the answer must be "No." However, to the question as to whether or not in properly selected cases they effect results which are sufficiently palliative to be justifiable the answer is definitely "Yes." They are not curative because they do not remove the cause. The primary seat of the disease process in cases of essential hypertension is in the blood vessel walls themselves, particularly the blood vessels of the kidney. Nowhere more than in Cleveland can it be stressed that substances derived from the kidney can modify blood pressure and the circulation. Evidence seems to indicate that there are persons who are prone to develop hypertension because of the intrinsic properties of their blood vessels. Persons most likely to develop hypertension are born with a vascular tree hyperdynamic in its response to physical, nervous and humoral influences. Denervation of the renal vessels could be expected only to check or ameliorate a process which is primary in the vessels walls themselves and capable of progression without nervous influences. That the nervous system may play a significant role in the initiation and development of human hypertension is admitted by all. In man the nervous system is probably mostly concerned in the initiation of the hypertensive state. Consequently the plea is made again that persons giving adequate evidence that they probably will develop a fixed hypertensive state should be urged to have their kidneys and adrenals denervated. The surgeon's degree of success with such cases will vary directly with the timeliness of surgical intervention. The operation for essential hypertension as generally performed results in denervation of the adrenals as well as of

29. Blackman, S. S., Jr.: Arteriosclerosis and Partial Obstruction of the Main Renal Arteries in Association with "Essential" Hypertension in Man, *Bull. Johns Hopkins Hosp.* 65: 353, 1939.
30. Rytand, D. A., and Holman, E.: Arterial Hypertension and Section of the Splanchnic Nerves, *Arch. Int. Med.* 67: 1 (Jan.) 1941.

the kidneys. This must result in a diminution of the amount of epinephrine released especially during stress. Experimental evidence is at hand to show that the smooth muscles of hypertensive animals respond hyperdynamically to epinephrine, and it is possible to show that epinephrine can stimulate the central nervous system directly. The symptoms from which relief is secured are "nervous" in origin. On a perfectly reasonable basis denervation of the adrenals thus could be expected to lessen the nervous response to both centrally and peripherally directed nerve impulses. This is offered as an explanation for clinical improvement from nervous symptoms in patients in whom no blood pressure drop is secured. I would voice some skepticism about the necessity of extending the scope of our surgical procedures more and more, especially when early cases are available for treatment.

DR. GEZA DE TAKATS, Chicago: There are two points I should like to bring up in closing the discussion. One is the definition of malignant hypertension. Obviously, this is the crux of the situation. If one follows the classification of Keith and Wagener closely one will note that group 4 hypertension shows papilledema, retinal hemorrhages, loss of renal function and cardiac impairment. Now, obviously, the patients in Dr. Peet's series and perhaps in Dr. Smithwick's series that were getting results in spite of a group 4 hypertension may have been in an early malignant phase. That is, they had a papilledema although the renal function was intact. In this sense I agree that this group should be operated on. However, the completely developed group 4 hypertension, with a urea clearance of 20 cc. per minute or less, in our experience has always failed to respond to surgery. About Dr. Heinbecker's discussion regarding the importance of primary vascular involvement in the kidney, we are sure that this holds for a number of cases. We are becoming more and more conscious of infectious diseases producing early arteriolar changes. In our series we have patients with hypertension, so-called essential hypertension, with well proved rheumatic infection in childhood. I am sure that rheumatic arthritis and vascular changes after toxemia of pregnancy can cause hypertension. Nevertheless the clinical results are so impressive that, regardless of where the infection came from or what the origin of the renal changes is, splanchnic nerve section should be done. In a report by Dr. Kahn there is a suggestion that if the less complete, partial sympathectomies fail, then perhaps an extension of the operation should be done such as Dr. Smithwick has suggested. That is just exactly the stage that we have gone through. Time and limitation of space did not allow me to discuss the fact, but we have had 15 patients who have five or six year follow-ups in whom high blood pressure has recurred almost to the preoperative level. Three of them were reoperated on by the Smithwick method and are now classed as cured.

Ibsen Was a Pharmacist.—The great Nordic dramatist Henrik Ibsen was a pharmacist for six years. At the age of 16 he became an apothecary's apprentice in the pharmacy of Grimstad, in three years passed the "assistant" examination and for three more years manufactured medicines and ointments in the pharmacy. Did this pharmaceutical occupation enter into Ibsen's dramatic creation? By no means, although we meet much of medical interest in his plays, and especially a rich psychopathologic casuistry, to which belong types such as Oswald Alving in *Ghosts*. Only in one place, where one would least expect it, in the metaphysical drama *Brand*, the two words quantum satis (q. s. in prescriptions) testify to Ibsen's association with pharmacy. They are found in the stirring four concluding lines of the play. Brand, the Nordic Faust, at the end of his life cries that he has sacrificed himself to the principle "all or nothing":

"God. I plunge into death's night.
Does not lead us to thy Light
Manly effort's quantum satis?"

—Weiss, Frederick A.: *The Pharmacist on the Stage*, *Merck Report*, January 1942.

SHORT WAVE THERAPY IN THE TREATMENT OF SINUSITIS AND ALLERGIC RHINITIS

A STATISTICAL EVALUATION

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The advent of short wave therapy on the therapeutic horizon in the past ten years has brought forth exorbitant claims regarding its efficacy. These have encouraged its indiscriminate use by the medical profession, often on the insistence of the patient. Our purpose in this report is to demonstrate the limitations of and indications for this increasingly popular form of physical therapy in intranasal disease by statistical analysis of 160 cases¹ of acute and chronic sinusitis and of allergic rhinitis treated by short wave therapy in Vanderbilt Clinic in the past three years.

Gale² in 1935 reported "it is yet too early to go into the causes for the results obtained, but, from the experience gleaned from treating fifty chronic sinus conditions, I believe the ultra short wave to be the best means of combating sinus conditions at present." Tebbutt³ in the same year and Talia⁴ two years later reported equally good results from the use of short wave therapy but extended its scope to the acute infection as well. Tamari⁵ in 1932 advocated the application of this modality of physical therapy to allergic rhinitis.

More recent publications, however, have questioned the universal benefit of short wave therapy. Hollender⁶ in 1939 wrote that "short wave diathermy is an effective therapeutic aid to other procedures but is practically valueless in the large majority of cases of chronic diseases of the maxillary sinus." His conclusions favor its use in acute sinus infections. The report of the Council on Physical Therapy⁷ stated in 1939 that infrared and short wave diathermy "are useful adjuncts to other treatment after adequate drainage has been established. Medical diathermy is of value in the relief of pain: the frontal and maxillary sinuses are most suitable for treatment."

Our statistical survey would indicate that, at best, short wave therapy, if combined with other routine measures in common use by the otolaryngologist, is to be recommended only for the alleviation of pain and diminution of discharge in chronic and subacute sinusitis. It has no therapeutic value in allergic rhinitis and it does not appear to expedite the recovery of acute sinus infections, in which the prognosis with adequate conservative therapy has been found to be favorable.

The cases considered in this series, with the exception of the allergic group, were for the most part observed

From the Departments of Otolaryngology and Physical Therapy, Vanderbilt Clinic, Presbyterian Hospital.

1. Including 40 cases of Edmund P. Fowler Jr.
2. Gale, C. K.: Use of Ultra Short Waves in Sinus Therapy, *Laryngoscope* 45: 520-525 (July) 1935.
3. Tebbutt, H. K., Jr.: Effect of Physical Agents on Temperature of Nasal Sinuses, *Arch. Otolaryng.* 22: 733-743 (Dec.) 1935.
4. Talia, F.: La marconiterapia nelle sinusiti croniche, *Arch. di radiol.* 13: 23-31 (Jan.-April) 1937.
5. Tamari, M.: Zur Diathermiebehandlung der Rhinitis vasomotoria, *Ztschr. f. Hals-, Nasen- u. Ohrenh.* 31: 490-499, 1932.
6. Hollender, A. R.: Short Wave Diathermy in Treatment of Nasal Sinusitis, *Arch. Otolaryng.* 30: 749-754 (Nov.) 1939.
7. Medical Diathermy, Report of the Council on Physical Therapy, *J. A. M. A.* 112: 2046 (May 20) 1939.

and treated during the unseasonable winter and spring months. It is not within the scope of this survey to consider climatic factors, bacterial flora and other less obvious variables. Rather, it has been our aim to analyze the therapeutic results in a moderate sized group, showing a cross section of the incidence of sinusitis in this locality.

THEORETICAL CONSIDERATIONS

The effect of short wave diathermy on man was noted by Gale³ in 1927 when he reported the rise in temperature in workmen exposed to high frequency electric currents in the vicinity of radio transmitters. The striking property of oscillations below 30 meters to pass through mediums of poor electrical conductivity was well illustrated by this worker. An 8 meter wave was passed through a series of glass receptacles containing, in order, 0.1 per cent potassium permanganate, tap water and a 3 per cent salt solution. At the end of ten minutes the salt solution had risen in temperature from the room level of 78 F. to 93 F., while the other fluids changed less than 3 degrees F. The concentration of short wave heating effect in good conductors as compared with those in poorer conductors is the rationale for heating the nasal and sinus mucous membrane. The ability of short wave emanations to penetrate bone is likewise of basic importance.

In conventional long wave diathermy machines the frequency employed is usually in the region of 1 million cycles a second (wavelength 300 meters) while in the short wave machines 10 to 50 million oscillations per second are produced (30 to 6 meter wavelengths). Short wave currents have the great advantage over diathermy emanations in that they permit transmission from machine to patient without metallic contact. This greatly reduces the danger of burns and adds to the ease of application of short wave machines. In calculating the dosage in short wave therapy the "lamp load" output of a machine is only of relative importance because of the great number of variables in technics of application: the patient's tolerance is the most important guide.

TABLE 1.—Allergic Rhinitis

Number of Cases	Patients Showing Significant Improvement on Short Wave Therapy	Patients Showing Improvement After 3 Month Follow Up	Patients Showing No Change During or After Therapy
25	16%	0%	84%

The opinion of most American observers concerning tissue heating is that differences in power output of the machine and the technic employed play a more vital role than the actual length of the short wave, per se. The preference expressed by many continental observers for the shorter wavelengths (6 to 12 meters) in intranasal therapy seems to be based on acceptable clinical evidence. The use of the 1 and 2 meter machines now being employed by a few workers has not been adequately reported.

There has been a tendency to ascribe to short wave action on human tissue many mysterious therapeutic properties other than the production of heat. Specific bactericidal effects,⁸ antibody formation,⁹ histamine-like

response¹⁰ and athermic action¹¹ have all been defended. But, as pointed out by Hollender, who quotes the Council on Physical Therapy,⁶ "In the light of present observations the consensus seems to be that no physiologic effects other than those attributable to heat have been substantiated."

In the light of our present knowledge, the action of heat in the nasal mucous membranes may be said to be one of hyperemia and hyperlymphia. By dilating the vascular bed and stimulating the flow of lymph, heat artificially aids in much the same way as any natural inflammatory process in controlling local infectious

TABLE 2.—Acute Purulent Sinusitis

Number of Cases	Per Cent Showing Decided Improvement	Per Cent Showing Moderate Improvement	Per Cent Showing No Improvement or Worse
25	32	44	24

processes. Should adequate nasal and sinus drainage exist, the beneficial results of heat produce their maximum effect.

However, in a nondraining empyema of a closed sinus space the increased turgescence and secretion of the nasal mucous membrane simply adds to the pain and tenderness already present. As mentioned by Titus,¹² "it is important first to shrink down the nasal mucous membrane so that the natural openings of the sinuses may be available to give relief from the pressure which will obviously be increased by the treatment." We are furthermore of the opinion that, in those acute cases in which simple shrinkage does not afford adequate sinus drainage, sinus irrigations by natural ostium or trocar, and not short wave therapy, are the procedure of choice after a trial period of ten days to two weeks has elapsed.

TECHNICAL CONSIDERATIONS

Selectivity of tissue heating in the short wave field occurs in inverse relation to the frequency of the oscillations. Presumably the shorter the wavelength of the apparatus used (more frequent oscillations) the more uniform will be the heat generated in the tissue.

To date the accepted version of the effects of short wave in therapy is that any favorable result is brought about by the heat produced in the tissue treated and by the accompanying physiologic response to such heat.

Many claims have been made for short wave in treatment of sinus disease, and in checking these it appears to us that wavelengths throughout the entire range of commercially available equipment have been utilized and reported on with varying degrees of enthusiasm.

Physically one would expect the most uniform heating of bone underlying soft tissues using commercial equipment at 6 meters. The additional advantages of all 6 meter equipment is the fact that it permits the use of space or noncontact electrodes with arms. This method of application over the face is uniformly simple and convenient.

We wished to secure some of the advantages of this method of application and also wished to ascertain deliberately the effect of short wave out of the 6 meter range. We selected an apparatus, A. M. A. Council accepted, of 12 meters with sufficient output to permit the use of arms with spacing. We feel that any favor-

8. Schliephake, Erwin: Importance of Ultra-High Frequency Therapy, Arch. Phys. Therapy 14: 389 392 (July) 1933.
9. Jounard, Farel: Rationale of Short Wave Diathermy in Acute Sinusitis, Arch. Phys. Therapy 20: 338 339 (June) 1939.

10. Wolf, H. F.: Experimental Studies on Specificity of Short Wave Diathermy, Arch. Phys. Therapy 18: 358 362 (June) 1937.
11. Tomberg, Victor: Athermic Short Wave Effects and Athermic Therapy, Strahlentherapie 59: 373 (June 20) 1937.
12. Titus, N. E., in discussion on Jourard.

able result at this wavelength would be more representative of similar effects to be expected both above and below this point in the short wave scale.

The machine, a standard model, employs four tubes and operates on 60 cycles, 103-130 volts. The lamp load output is 400 watts with a maximum input of 1,200 watts.

Application.—In all cases a disk 7 inches in diameter was placed over and parallel to the nose and forehead of the patient, the electrode centered over the bridge of the nose. The other electrode was placed anteriorly over the sternal region, the edges of the disks approximately 11 inches apart.

The facial electrode was pressed firmly in contact with the nose and forehead, only six thicknesses of thin linen towel separating the electrode from the skin. (If this electrode is not in firm contact, uneven heating occurs and much prickling and potential burning.)

The sternal electrode was placed at a distance of $3\frac{1}{4}$ inches from the anterior chest wall with air spacing only.

By this technic the maximum heat is felt over the anterior face. Less heat is always produced beneath the other electrode. The current was turned to the maximum tolerance of each patient.

The duration of the application was fifteen minutes.

Frequency.—Treatments in acute cases were given daily and preceded immediately by the usual nasal procedures to assure free drainage. In the chronic cases the treatments were given three times a week. The maximum number of treatments in all cases was limited to six weeks, with a total of eighteen treatments in chronic cases.

SHORT WAVE THERAPY IN THE TREATMENT OF ALLERGIC RHINITIS

Twenty-five typical cases of allergic rhinitis as proved by history, cutaneous tests and clinical findings were treated by short wave therapy. In 6 of this number, in which there was a history of seasonal attacks of coryza, therapy was given three weeks before the allergic

TABLE 3.—Symptoms of Acute Purulent Sinusitis

	Number of Cases * Showing Symptom	Per Cent Decidedly Improved	Per Cent Moderately Improved	No Change or Worse
Headache (pain).....	21	38	33	29%
Discharge.....	23	31	43	26%
Obstruction.....	9	22	33	45%
Tenderness.....	14	14	35	51%
Postnasal drip.....	15	20	53	27%

* Total number of cases, 25.

period as well as three weeks after the appearance of the acute symptoms. All 25 patients received the usual dosage of short wave therapy three times a week for a total of six weeks.

Our results are summarized in table 1. It is apparent that none of our allergic patients showed any permanent benefit from short wave therapy and that only 16 per cent revealed significant temporary relief from any or all of their complaints, which included nasal discharge and obstruction, sneezing and conjunctival irritation.

ACUTE SINUSITIS

Another group of 25 patients suffering acute purulent infections of the paranasal sinuses were treated by short wave therapy. Patients in this group gave histories of

symptoms of less than three weeks' duration and of no previous sinus infections. The great majority of our cases were of maxillary or frontal empyema but accompanying ethmoid and sphenoid disease was present in a few. Diagnosis was determined by the usual clinical and x-ray methods.

In these acute cases, short wave therapy was applied three or five times a week for two weeks. In 18 of the cases daily clinic therapy consisted of nasal shrinkage and irrigation as well as home administration of benzoin or menthol inhalations. In the other 7 cases in this series only ephedrine drops for home application were prescribed.

TABLE 4.—Chronic Sinusitis

	Number of Cases	Per Cent Decidedly Improved	Per Cent Moderately Improved	No Change or Worse	At 3 Month Follow-Up, per Cent Showing Improvement
Purulent.....	38	24	12	64%	8
Nonpurulent.....	72	62	15	23%	19

* Total, 110 cases.

Table 2 summarizes the results obtained in the acute sinusitis group. In 32 per cent of the cases studied there was significant and rapid resolution of symptoms within five days and a somewhat more gradual appearance of objective improvement. Forty-four per cent of the patients were moderately relieved of their acute symptoms after two weeks, leaving in all 24 per cent, or about one fourth, who showed no improvement or became worse on the regimen described.

These persistent cases, which must be classed as failures, responded well to antral irrigations by trocar or natural osteal, frontal and sphenoid washings and, in 1 case of frontal sinusitis, to removal of the anterior tip of the middle turbinate. A 5 per cent solution of zinc peroxide instilled through trocar or cannula was found to be of special value in antrums yielding a foul, broken down, purulent discharge.

Of the special group of 7 patients treated only by short wave therapy and ephedrine drops applied by the patient, 4 were destined to fall into the failure class. These patients occasionally complained of increased headaches and transitory dizziness following physical therapy.

Table 3 analyzes these 25 cases of acute sinusitis by considering the effect of short wave therapy on the more common symptoms and signs, individually, when present. These include headache or localized pain, nasal discharge, obstruction to breathing, sinus tenderness and postnasal drip.

Of interest in this analysis is the fact that no single sign or symptom was greatly relieved by short wave therapy in over 38 per cent of the cases. The most universal improvement was seen in relief of headache, while in those 14 patients suffering from sinus tenderness only 16 per cent were significantly relieved and 50 per cent became worse or showed no improvement on physical therapy. We are of the opinion that the finding of maxillary, ethmoid or frontal tenderness indicates sinus involvement of a severe degree and usually with poor drainage. These factors may account for the very poor results of short wave therapy in patients showing this sign, and our results would contraindicate physical therapy until drainage has been established.

CHRONIC SINUSITIS

One hundred and ten patients suffering from chronic sinus disease were treated by short wave diathermy three times a week for six weeks. In this series 38 patients were shown by x-ray examination and sinus irrigations to have a purulent involvement of one or more paranasal cavity. During six weeks of physical therapy, as shown in table 4, 24 per cent of the group designated as chronic purulent sinusitis reported symptomatic relief. However, when again reviewed three months later, only 8 per cent of this series had maintained any prolonged benefit from their short wave therapy. Although observed regularly in the ear, nose and throat clinic during their period of physical therapy, these patients received only symptomatic rhinologic therapy such as tampons of mild protein silver and nasal irrigations. Sinus irrigations were performed only for diagnosis and relief of pain. In several cases a decrease in the amount of intranasal secretion and mucosal edema was noted, but no cases were seen in which sinuses previously black on transillumination or x-ray examination became appreciably clearer. In both

TABLE 5.—Symptoms of Chronic Sinusitis

	Number of Cases showing Symptom	During Short Wave Therapy			At 1 Month Follow Up, per Cent Showing Improvement
		Per Cent Decidedly Improved	Per Cent Moderately Improved	No Change	
Headache (pain)	78	72	20	8%	48
Discharge	90	48	27	25%	18
Obstruction	62	38	28	34%	23
Tenderness	30	6	56	38%	0
Postnasal drip	52	50	32	18%	14
Associated upper respiratory infection	10	50	10	40%	40

* Total, 110 cases

this and the chronic nonsuppurative group to be considered next, most improvement claimed was symptomatic rather than objective.

Seventy-two patients with chronic nonpurulent sinusitis were observed during a six week course of short wave therapy. In this group the typical findings were hyperplastic nasal membranes with perhaps a mucoid discharge on occasion but no purulent discharge. (Nine of these patients, to be discussed separately, had previous multiple intranasal operations.) These patients complained of one or all of that familiar quartet mucoid nasal discharge, postnasal drip, headache and nasal obstruction. As presented in table 4, 62 per cent of the patients felt much improved during physical therapy, but of this number only 19 per cent were clinically or symptomatically benefited after a three month follow-up.

The more frequent signs and symptoms of the entire 110 cases of chronic sinusitis are considered individually in table 5. Again we find the highest percentage of success to be in the relief of headache. In this symptoms group 72 per cent of the patients reported improvement during short wave therapy and 48 per cent showed continued relief three months later. Thirty patients complaining of sinus tenderness were entirely unaided by short wave on three month follow-up and only 6 per cent benefited during their six week course of therapy. Relief from recurrent upper respiratory infection was reported by 5 patients of 10 who volunteered this as their outstanding complaint.

Nine patients classed in the chronic nonpurulent sinusitis group who had previously undergone multiple sinusal operations but who presented themselves with continued nasal complaints were studied during a six week course of physical therapy. Two of these patients were greatly benefited by short wave treatment, while 4 more reported partial relief from their complaints.

COMMENT

The negligible effect of short wave therapy on allergic rhinitis is not unexpected. In our clinical studies the usual immediate post-therapeutic effect of short wave application has been one of increased turgescence of the nasal mucous membranes. We have failed to note any secondary dehydration of more than a temporary nature which might successfully influence the mucosal edema of allergic rhinitis.

Our statistics in the acute purulent sinusitis group reveal that 24 per cent, or about one fourth of our cases, did not respond to short wave therapy combined with simple nasal shrinkage. While these figures compare unfavorably with those of Furstenberg,¹³ who reports 95 per cent cures on simple nasal therapy in a carefully controlled group of college students living in a more sheltered environment, they closely approach the average of clinic groups in this section of the country. It would therefore appear that the added expense and time required by short wave therapy does not appear to be indicated in the acute sinusitis sufferer until other simple otolaryngologic methods have failed. Those cases presenting sinus tenderness particularly contraindicate short wave therapy, as they usually signify inadequately draining sinuses and are rendered worse through increase of the edema and secretion of mucous membrane lining these cavities.

For the patient with chronic suppurative sinusitis we believe that sinus irrigations and intranasal operative measures facilitating drainage are the procedures of choice, as only 8 per cent of our patients showed persistent (three month) improvement in their symptom complex on short wave therapy.

In the nonsuppurative group, however, we have found that short wave therapy is of distinct benefit. It is this group that is particularly resistant to any form of therapy, and it is here we find that a total of 77 per cent (62 and 15 per cent) of our patients were aided during their course of physical therapy.

Of note in this group are those unfortunates who after multiple intranasal operations still persist in their symptoms. In a small but significant group of 9 patients of this refractory type, 6 showed much or moderate benefit from the application of short wave treatment.

SUMMARY

1. Short wave therapy is employed indiscriminately in many intranasal conditions in which it does little good and may do harm.

2. It is of no value in allergic rhinitis.

3. Its application in acute sinusitis even in conjunction with nasal shrinkage and irrigations does not produce results superior to conservative nasal therapy alone.

4. In cases of chronic nonpurulent sinusitis which present, in general, a poor prognosis it is of definite benefit, particularly in the relief of headaches.

¹³ Furstenberg, A. C. Treatment of Acute Nasal Accessory Sinus Disease. *Tr. Am. Laryng. A.* 60:240-254, 1938.

OBSERVATIONS ON THE TOPICAL USE
OF SULFONAMIDE DERIVATIVES

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The ability of the sulfonamide derivatives to prevent infections in wounds when applied locally has now become well established. The fact has been repeatedly demonstrated in experimental, operative and traumatic lesions and has been fully reported.¹ It is possible by means of such topical application to create not only a high concentration of the drug in the tissue fluids surrounding the lesion but to maintain a degree of hemoconcentration varying from 3 to 4 mg. per hundred cubic centimeters in twenty-four hours to a residual trace a week later following the use of 10 to 15 Gm. in large wounds. While a hemoconcentration at this level is hardly sufficient to combat an established septicemia of any real intensity, it is apparently high enough to prevent its development from a properly treated contaminated wound. The subject is now sufficiently

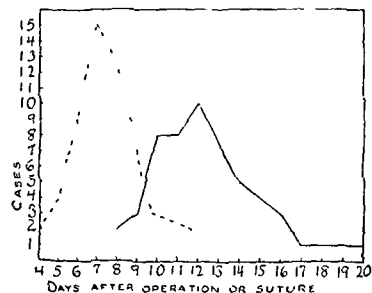


Fig. 1—Effective healing time. Solid line, group treated with sulfonamide derivatives, broken line, control group

advanced that generalizations on end results in terms of gross infection are no longer sufficient, and more detailed consideration of different aspects of the problem are required. In Key and Burford's² 1940 report the suggestion was made that the topical application of sulfanilamide might delay the healing time of wounds of the soft tissues. They thought that it did, but to an inconsiderable degree. In their later report³ of 1941 it was stated that the use of smaller quantities of the crystals (in the order of 5 Gm.) had proved equally effective and did not cause any apparent delay in healing. Retarded wound healing had been noticed by others in reports on the general problem and has been as frequently denied. In view of this discrepancy I have studied a varied series of cases solely from the point of view of wound healing.

Fifty cases of traumatic and operative wounds of the soft tissues were chosen to be treated by a standard technic consisting of thorough washing with green soap and water and, where indicated, débridement, and saline irrigation followed by simple unmedicated dressings. Primary suture was employed to the extent which the

wound permitted, that is, was total in all but a few complex traumatic wounds and plastic procedures in which certain crushed areas did not permit perfect apposition of skin edges. The more extensive lesions were immobilized by splints, plaster of paris or traction. Powdered sulfanilamide or sulfathiazole was applied in quantities varying from 1.5 to 10 Gm., sufficient to cover all surfaces of the wound. Massive packs of the powder which might form an obvious block to surface approximation were avoided. (The question of the relative bacteriostatic action of these drugs will not be considered here; only their effect on wound healing.) As a control fifty operative and traumatic wounds were observed in which treatment was identical except that no sulfonamide derivative or other medication was used.

In the control group there were four superficial wound infections; in the sulfonamide group there was one infection occurring in a case in which Kirschner wire was used as internal fixation. None of these infections were serious, and all cleared up easily when the wounds were exposed.

Observations were made at frequent intervals, in some cases daily, until effective healing had taken place. By effective healing of a wound is meant the surface to surface apposition of skin and subcutaneous tissues characteristic of primary union of sufficient cohesive strength that on removal of the sutures the apposition remained. During the process of healing a decided difference was observed in the tissue reaction of most of the patients treated with sulfonamide derivatives as against the control group. In the former occurred some features which, had they appeared in nontreated wounds would have indicated, or at least suggested, deep infection. The wound edges were apt to be reddened, often

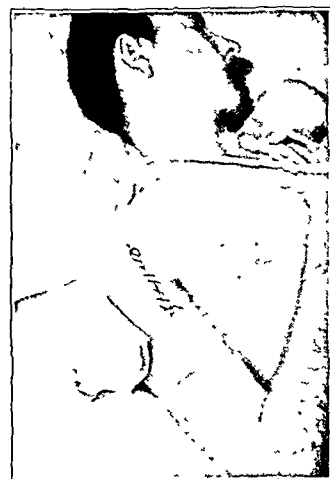


Fig. 2—Healing five days after tenodesis of shoulder.

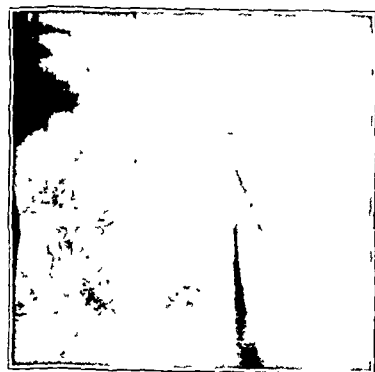


Fig. 3—Healing two weeks after tenodesis of shoulder.

Read before the combined meeting of the Orthopedic Section of the New York Academy of Medicine and the Philadelphia Orthopedic Club, Nov. 21, 1941.

1. Jensen, N. K., Johnsrud, L. W., and Nelson, M. C. The Local Implantation of Sulfanilamide in Compound Fracture, *Surgery* 6:1 (July) 1939. Harrell, W. E., and Brown, A. E. Local Use of Sulfonamide Compounds in the Treatment of Infected Wounds, *Proc Staff Meet, Mayo Clin* 15:611 (Sept. 25) 1940. Campbell, W. C., and Smith, Hugh. Sulfanilamide and Internal Fixation in Treatment of Compound Fractures, *J. Bone & Joint Surg* 22:959 (Oct.) 1941. Colebrook, Leonard, and Francis, A. E. Local Use of Sulfanilamide Powder in Wounds, *Lancet* 1:271 (March 1) 1941. Key and Burford, footnotes 2 and 3.

2. Key, J. A., and Burford, T. H. The Local Implantation of Sulfanilamide in Compound Fractures, *South M. J.* 33:449 (May) 1940.

3. Key, J. A., and Burford, T. H.: Prophylactic Implantation of Sulfanilamide in Clean Operative Wounds for Reduction of Postoperative Infections, *Surg., Gynec. & Obst* 73:324 (Sept.) 1941.

somewhat swollen and, where granulation tissue was exposed, showed a grayish cast. On several occasions infection was suspected and the wounds probed respectively four, five and eight days after primary suture or operation. Finely granular clumps of sulfonamide derivatives were found still unabsorbed and small quantities extended through the openings. Serosanguineous fluid was commonly found on the dressings and could be expressed from the lesion up to the point

of complete healing. Mixed with the granules the resemblance to ordinary pus was striking. Key's recent observation that the extent of wound reaction decreases with the amount of drug used was confirmed. It may be possible that future observations will disclose a minimum effective dose that will eliminate this reaction,

at least to a large extent. It is important that, meanwhile, the surgeon using topical sulfonamide derivatives be acquainted with this and bear in mind that it is merely a phase in normal healing under the circumstances. If this picture is appreciated, unnecessary probings, early suture removals and secondary wound exposures will be avoided. The appearance is best described as that of a noninfected foreign body reaction in the subcutaneous tissues.

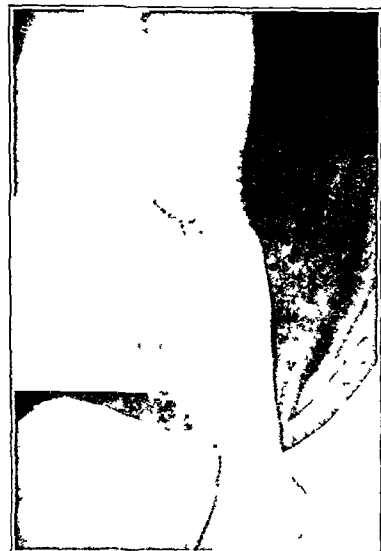


Fig. 4.—Healing twelve days after medial meniscectomy.

In the present series of cases there was no question that wound healing was delayed when powders were implanted locally. This applied even to the cases in which the tissue reaction described was slight. The delay was considerable, representing on the average between 50 and 75 per cent of the time factor. Dressings done on simple lacerations or cleancut incisions were still oozing serosanguineous fluid on the fifth or seventh days in almost all of the cases treated with sulfonamide derivatives and were generally dry in the control cases. In the former, healing was not complete for ten to twelve days and often only in part of the wound surface at that time. In the chart the difference in healing time between the two groups is expressed by a graph. The points represent as nearly as could be determined clinically the time at which wound healing was considered effective. It is conceded that in so expressing these data a large margin of error must be allowed, but it is also submitted that the same margin applies to the two groups. This delay in healing not only causes longer hospitalization or attendance at the clinic but, of greater importance in extremity surgery, delayed the time in which active motion or local massage might have been instituted.

The hair line scar characteristic of primary union in an area of minimal skin stress which occurred normally among the control group was almost never observed among the patients treated with sulfonamide derivatives. With few exceptions in comparable areas the scar of the treated group remained broader at equivalent time intervals than did those of the controls. Since each scar is a unique phenomenon whose multiple factors cannot be duplicated even experimentally, there is no way of submitting comparable measurements. However, among the various types of cases the Jones or anteromedial crescentic incision for excision of a medial meniscus of the knee joint was chosen for

comparison. These incisions are as closely comparable in location, size and depth as are obtainable in surgery of the extremities. Twelve of these were in the cases in which sulfonamide derivatives were used and 14 were in the control group. At any stage of their healing one could distinguish a case belonging to one or the other group with few errors simply by observing the healing scar. In general this observation applied to all comparable cases. The healing of a wound or incision treated with a sulfonamide derivative is very apt to leave a scar of greater breadth and depth than would be formed in a similar instance of primary union when the drug was not used.

It was first thought that the use of a sulfonamide derivative locally left a larger mass of subcutaneous fibrosis than did the untreated cases. This is true in the early weeks of healing. In 2 cases in which secondary operations were necessary the subcutaneous masses were found to resemble grossly the dense grayish tissue characteristic of healing in slowly subsiding infections. Since this was found only in connective tissue areas and since in no case did the deeply palpable masses appear to involve muscle or synovial tissue, it was felt that the sulfonamide derivatives might have the effect of selective stimulation of connective tissue cells. This is here recorded as a temporary phenomenon. With passage of time it was found that the subcutaneous masses characteristically larger in the treated cases than in the control group were absorbed so that in the space of two to four months the tissues beneath the cutaneous scars were equally free.

Few differences could be found in the rate or the type of effective healing between those cases in which sulfathiazole was used and those in which sulfanilamide was used. At this writing it appears that sulfathiazole is somewhat less irritating than sulfanilamide. Further observations will be needed to confirm this. The rate of healing was not significantly different, but apparently because of the less irritant quality a finer scar remained in most instances. Since the most common postoperative contaminant in extremity surgery is the staphylococcus, sulfathiazole is theoretically the more desirable; but since the anaerobes and streptococci are the most common contaminants of traumatic wounds,



Fig. 5.—Healing twelve days after external meniscectomy

sulfanilamide is the obvious choice in such cases. The newer drug sulfadiazine, now commercially available, will be tried in the near future.

In 27 cases the sulfonamide derivatives were applied to wounds in which joint or tendons were exposed. In these instances the drugs remained in contact with synovial and tendon sheath surfaces. At this time no particular unfavorable joint or tendon sheath reactions have been observed in any of the cases and there has been no residual dysfunction peculiar to these applications. This series will be continued and reported later.

CONCLUSIONS

The local applications of sulfonamide drugs to wounds of the soft tissues or cleancut operative incisions in which primary suture is indicated retards healing by at least 50 per cent of the time factor and promotes excessive cutaneous scarring. In extremity surgery this delay in healing time may postpone necessary active motion and massage; in plastic skin repair it may interfere with a cosmetic result. Therefore, unless infection is anticipated because of the circumstances of the lesion or of the operation, the use of topical sulfonamide therapy may be an unnecessary burden. However, its use in cases in which infection may be anticipated, such as in wounds contaminated under field conditions, is now almost obligatory.

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THE USE OF SULFONAMIDE
DERIVATIVES

AS A SOLUTION TO THE PROBLEM OF BACTERIAL
CONTAMINATION IN STORED PLASMA

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Bacterial contamination has been the most serious obstacle to the preservation of plasma in the liquid state. Several methods have been proposed to minimize the dangers involved in the accidental use of contaminated plasma,¹ but none previously proposed have proved adequate. We have instituted the use of the sulfonamide group of drugs in stored plasma as bacteriostatic and bactericidal agents. In all of my experimental work and in actual routine clinical usage over a two year period the method has been found to be completely satisfactory regardless of the temperature (4 C.-24 C.) or duration of storage. The quantity of the drug necessary to accomplish the purpose in stored plasma is small, so that there are no noteworthy contraindications to its routine use.

The sulfonamide drugs may be used in conjunction with any of the methods of processing plasma now available. However, since the danger of bacterial contamination of plasma is the most serious objection to storing it in the liquid states, the addition of these drugs to such material makes it possible for hospitals to depend on the safety of plasma stored in the fluid form. This method lends itself conveniently to civil and military use. The

expensive and elaborate methods for processing this essential material thus becomes unnecessary in most instances.

SOURCES OF BACTERIAL CONTAMINATION

Regardless of the care used in the collection and handling of blood or plasma, the chances of bacterial contamination are numerous. The facts that bacteria geminate on the average every thirty minutes and that this occurs whenever they are present in a fluid menstruum and that many species grow even at refrigerator temperatures magnify the seriousness of the problem. Since plasma is in the liquid state for a period of time in all the methods proposed for processing it, i. e. before freezing or desiccation or after reconstitution by thawing or redissolving, it is apparent that in these instances favorable circumstances exist for bacterial multiplication. All these procedures involve accidental contamination by organisms in the air and from the cutaneous surface which harbors a multitude of bacteria, many of which are still viable even after the most scrupulous care in the preparation of the cutaneous area prior to phlebotomy. It has been shown that absolute antisepsis of the cutaneous surface is not possible² and that the hypodermic needle in its passage through the skin may carry with it residual bacteria. Furthermore, a transient asymptomatic state of bacteremia does exist in patients from time to time owing to the entrance of intestinal bacteria into the portal system so that, in spite of every possible care, the blood obtained may contain organisms well adapted to this particular environment. The practice of pooling blood samples, in itself a bacteriologically hazardous procedure, makes possible the contamination of large quantities of plasma. One might include the more limited, specialized technic of obtaining blood from placental sources with the obvious sources of contamination involved.

It is true that in most of these instances the bacteria involved are not true pathogens. It must be emphasized, however, that the sources of greatest trouble are saprophytic species. The latter produce pyrogenic and other toxic substances which, when injected directly into the blood stream, produce a maximum deleterious physiologic effect. The kind of organism present, therefore, is less important than the number of bacteria in such material, since a large number implies the presence of reaction-provoking substances. As the original contamination seldom consists of more than a few organisms, it is clear that if they are prevented from multiplying the dangers are largely eliminated. In the use of the sulfonamide derivatives it has been shown that they not only exert this desirable effect but over a period of time actually effect sterilization of contaminated samples.

INADEQUACIES OF STERILITY TESTS

If contamination does occur despite the use of ordinary care in the collection of blood by means of the closed system, the inoculum obviously will be very minute. The manipulations of pooling, centrifuging and transferring plasma present additional possibilities for a minimal contamination. In view of this, random sampling of the material for sterility tests before the organisms have multiplied in the original specimen gives results that are open to question, since the chance of including one of the bacteria in the small sample removed for culture is remote. If the plasma is incubated or

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Strumia and McGraw.*

2. Novak, Milan, and Hall, Harry: A Method for Determining the Efficiency of Preoperative Skin Sterilization, *Surgery* 5: 560 (April) 1939.

stored for a period of time prior to the conducting of sterility tests, contamination is then easily demonstrated by routine sampling; but the original material must be discarded. It is to be remembered also that the sampling procedure itself is hazardous and may introduce a contaminant into sterile plasma.

TABLE 1.—*Organism Vibrio Sp.*

Days	Control	Sulfanilamide			Sodium Sulfapyridine			Sodium Sulfathiazole		
		0.02%	0.05%	0.1%	0.02%	0.05%	0.1%	0.02%	0.05%	0.1%
		Storage at Room Temperature (20-24 C.)								
0.....	410	310	410	400	340	330	430	210	320	90
3.....	10 ⁶ +	0	0	0	20	0	0	0	0	0
10.....	10 ⁶ +	0	0	0	10	0	0	0	0	0
30.....	10 ⁶ +	0	0	0	0	0	0	0	0	0
70.....	10 ⁶ +	0	0	0	10	0	0	0	0	0
Storage in Refrigerator (4-6 C.)										
0.....	380	400	430	450	380	440	370	440	140	260
3.....	10 ⁶ +	410	820	890	500	512	109	900	650	10
10.....	10 ⁶ +	50	10	10	80	10	0	10	0	0
30.....	10 ⁶ +	10	0	0	0	0	0	10	20	0
70.....	10 ⁶ +	10 ⁶ +	10 ⁶ +	0	8,900	0	0	93,400	8,700	0

Because of these important considerations a bactericidal substance acting on the original chance contaminant is of practical importance. It has been found that the sulfonamide compounds, when incorporated into the citrate solution, solve all the difficulties of contamination from various sources. These drugs exert their bacteriostatic action from the instant the blood is drawn and, over a period of a few days, actually kill the bacteria present. Contaminated plasma is thus actually rendered safe for use. In our experience³ as well as that of others,⁴ merthiolate (sodium ethyl mercurithiosalicylate) has been found to be inadequate for this purpose.

EXPERIMENTAL DATA

Human citrated (0.3 per cent) blood plasma was used in the experiments. Five or 10 cc. quantities were placed into sterile tubes and increasing amounts of the sulfonamide derivative under investigation were added to each successive tube. Final concentrations of the drugs ranged from 0.02 to 0.1 Gm. per hundred cubic centimeters of plasma. Owing to limitations of solubility, the sodium salt of the drug was used whenever indicated. Each tube, as well as a control containing plasma without the compound, was inoculated with 0.1 cc. of a saline dilution of the culture so that the final inoculum was less than 500 organisms per cubic centimeter of plasma. In some instances a larger inoculum was used. With the dilution-plating technic, the number of bacteria introduced into each tube was determined by culturing 0.1 cc. quantities of plasma on nutrient agar. The tubes were then placed in a refrigerator at 4 C. to 6 C. A duplicate set of tubes was allowed to remain at room temperature (20-24 C.). Subsequent periodic enumeration of the bacteria present in each tube was carried out at various intervals of time.

The drugs investigated included sulfanilamide, sulfapyridine, sulfathiazole and sulfadiazine. The bacteria used were in all instances from sources which have an application to the problem in question. One hundred and fourteen strains have been investigated over a two

year period. Twenty-three of these were isolated from stored blood and plasma, and thirty-one were isolated from cutaneous surfaces. The remainder were obtained from air, dust or soil. The organisms from these sources included the following:

Staphylococcus aureus (hemolytic and nonhemolytic).
Staphylococcus albus (hemolytic and nonhemolytic).
Staphylococcus citreus.
Micrococcus (several species).
Streptococcus (beta and alpha hemolytic types).
Pseudomonas aeruginosa.
Bacillus subtilis.
Bacillus cereus.
Bacillus mycoides.
Bacillus sp. (several unidentified species).
Vibrio sp. (unidentified; from the air).

Since it is not practicable to publish the results on all these organisms, the data presented are representative of the type of result obtained on organisms isolated from accidentally contaminated stored plasma or blood. In the tables are recorded the results of periodic enumeration of the bacterial population in various concentrations of the drugs.

SIGNIFICANCE OF EXPERIMENTAL RESULTS

Since only a small portion of my data are reproduced, supplementary comments are necessary in order to present all my evidence. The tables demonstrate the results on the sterilizing effect of the different drugs used. In most instances this was accomplished in three days at room temperature. A longer period was required for the same results to be achieved at refrigerator temperature. Therefore, maintaining contaminated plasma at room temperature for several days would actually be a useful procedure if one of the sulfonamide compounds was added. It is also apparent from table 1 that larger amounts of the drugs are necessary for longer periods of storage when the plasma is maintained at refrigerator temperatures. This is due partly to the decreased activity of the compound and partly to the preservative action of the low temperature on the bacteria.

TABLE 2.—*Organism Pseudomonas Aeruginosa (Pyocyanus)*

Days	Control	Sulfanilamide			Sodium Sulfapyridine			Sodium Sulfathiazole		
		0.02%	0.05%	0.1%	0.02%	0.05%	0.1%	0.02%	0.05%	0.1%
		Storage at Room Temperature (20-21 C.)								
0.....	14,720	16,880	16,000	14,050	11,520	10,210	10,550	12,200	12,500	12,140
3.....	10 ⁶ +	0	0	0	0	0	0	0	0	0
10.....	10 ⁶ +	0	0	0	0	0	0	0	0	0
30.....	10 ⁶ +	0	0	0	0	0	0	0	0	0
55.....	10 ⁶ +	0	0	0	0	0	0	0	0	0
Storage in Refrigerator (4-6 C.)										
0.....	7,050	6,400	5,000	6,410	8,320	12,800	9,000	12,800	9,100	5,120
3.....	4,480	7,010	3,840	2,840	5,120	3,810	3,222	6,400	6,400	6,400
10.....	2,000	3,440	2,000	2,440	3,400	5,480	5,400	5,720	1,920	2,600
30.....	250	70	140	200	110	140	140	60	0	0
55.....	40	0	0	0	0	0	0	0	0	0

In exceptional cases, control tubes became sterile owing to the bactericidal action of the plasma itself. This occurred in refrigerated specimens as well as in those maintained at room temperature.

The data show that no one compound is preferable, since the end results are the same. Preliminary results with sulfadiazine indicate that they will parallel those presented herein. They are not included because the period of storage has not been sufficiently protracted.

3. Novak, Milan: Use of Bacteriostatic Drugs in Preservation of Blood for Transfusion, Proc. Soc. Exper. Biol. & Med. 41: 210 (May) 1939.

4. Report of the Blood Transfusion Association Concerning the Project for Supplying Blood Plasma to England, Jan. 31, 1941; Blood Transfusion Association, 2 East 103d Street, New York. Struma and McGraw.*

In the results obtained on one hundred and fourteen strains of bacteria I encountered four which grew in a 0.1 per cent concentration of the compounds. These strains were originally isolated about two years previously from contaminated stored blood and plasma. At the time of isolation they were able to grow at

TABLE 3.—Organism *Staphylococcus Albus*

Days	Control	Sulfanilamide			Sodium Sulfapyridine			Sodium Sulfathiazole		
		0.02%	0.05%	0.1%	0.02%	0.05%	0.1%	0.02%	0.05%	0.1%
		Storage at Room Temperature (20-24 C)*								
0 . . .	20	10	50	30	10	40	20	30	40	20
3 . . .	30	30	20	60	40	60	50	20	20	20
10 . . .	10 ⁴ +	0	0	0	10	0	0	0	10	0
30 . . .	10 ⁴ +	0	0	0	0	0	0	0	0	0
104 . . .	10 ⁴ +	0	0	0	0	0	0	0	0	0

* Would not grow in controls at refrigerator temperature.

TABLE 4.—Organism *Bacillus Mycoides*

Days	Con trol	Sulfanilamide			Sodium Sulfapyridine			Sodium Sulfathiazole		
		0.02%	0.05%	0.1%	0.02%	0.05%	0.1%	0.02%	0.05%	0.1%
		Storage at Room Temperature (20-24 C)*								
0 . . .	60	30	60	60	40	20	50	60	50	70
3 . . .	40	0	0	0	0	0	0	0	0	0
10 . . .	10 ⁴ +	0	0	0	0	0	0	0	0	0
30 . . .	10 ⁴ +	0	0	0	0	0	0	0	0	0
120 . . .	10 ⁴ +	0	0	0	0	0	0	0	0	0

* Would not grow in controls at refrigerator temperature.

refrigerator temperatures and were completely inhibited in freshly drawn citrated human blood by 0.02 per cent sulfanilamide at 4 to 6 C. In the interim they were maintained on peptone mediums, acquired an unusual resistance to the bacteriostatic action of the sulfonamide derivatives and lost their ability to grow at refrigerator temperatures. It was found that 0.2 per cent of the sulfonamide derivatives was sufficient to bring about sterilization of plasma inoculated with these strains. It is deemed advisable, therefore, to use 0.2 per cent of the drugs routinely so as to insure complete safety, though it is not known whether similarly resistant strains ever occur as contaminants from the usual sources.

In an original publication⁵ on the use of sulfanilamide for insuring sterility of stored whole blood a 0.02 per cent quantity was recommended for routine use. Hunwicke⁶ has essentially confirmed these results. Since fresh blood contains active phagocytes, complement and bactericidal substances which reinforce the action of the sulfonamide derivative, only a small amount of the latter is required. In plasma larger quantities (0.2 per cent) of the sulfonamide compounds are necessary in the absence of the other antibacterial substances and because of the longer period of storage.

PRACTICAL APPLICATION OF THE METHOD

In actual use it is most convenient to draw blood from the donor directly into a solution containing both sodium citrate and the sulfonamide derivative. The antibacterial effect is thus obtained from the very moment the blood is removed from the donor's vein. For routine work it is advisable to use sodium sulfathiazole.

5. Novak, Milan: Preservation of Stored Blood with Sulfanilamide, J. A. M. A. 113: 2227 (Dec. 16) 1939.
6. Hunwicke, R. F.: Sulfanilamide as a Preservative in Stored Blood, Brit. M. J. 2: 380 (Sept. 21) 1940.

The solution consists of 1.5 Gm. of sodium citrate and 1 Gm. of sodium sulfathiazole sesquihydrate in 50 cc. of physiologic solution of sodium chloride. The solution is autoclaved in the regular flask into which blood is to be drawn. This amount of the sulfonamide drug makes a final concentration of 0.2 per cent when 450 cc. of blood is added. The plasma may then be separated by centrifugation or sedimentation. Whenever tests for sterility are desired they should be made with mediums containing para-amino benzoic acid to neutralize the bacteriostatic action of sulfathiazole, as suggested by Janeway and Shwachman.⁷

SUMMARY

The many advantages in the general use of plasma stored in the fluid state have been overshadowed by numerous reports of bacterial contamination. Another less important objection is the gradual deterioration of prothrombin, fibrinogen and complement. The dangers of contamination by bacteria can be completely eliminated by the addition of 0.2 per cent of sodium sulfathiazole. The objections raised on the basis of deterioration of certain elements are not pertinent, since they are not essential in the instances in which plasma transfusions are ordinarily instituted. In cases of shock, burns, hypoproteinemia and cerebral edema, the elements which deteriorate in stored plasma are of no import. In the majority of instances it is in these conditions that stored plasma is administered, so that the emphasis placed on the deterioration of these elements is not justified from the practical standpoint. In cases of shock with severe hemorrhage, of blood dyscrasias with hemorrhagic tendencies or of infections, the use of fresh blood and plasma rather than stored plasma is most advisable, since erythrocytes as well as the other components are essential to the therapy.⁸

Bacterial contamination, therefore, is the only important problem involved in the storage of fluid plasma. It is my opinion that sulfonamide derivatives, which exert their antibacterial effect under all conditions of processing and storage, make it possible for hospitals and others to rely on the safety and immediate availability of stored liquid plasma. The relatively expensive and elaborate methods for processing this essential material are therefore unnecessary in most instances, as Strumia and McGraw⁹ have already indicated.

CONCLUSIONS

1. Bacterial contamination is the only serious objection to storing plasma in the fluid state.
2. The addition of 0.2 per cent of a sulfonamide derivative, preferably sodium sulfathiazole, in plasma completely eliminates the problem of bacterial contamination, since it actually sterilizes minimally contaminated specimens of plasma regardless of the organism or the temperature involved (4 C. to 24 C.).
3. Plasma preserved with sodium sulfathiazole is safe, immediately available, economical and simple to use.
4. Elaborate and expensive methods for routine processing of plasma are unnecessary in most hospitals.

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7. Janeway, C. A., and Shwachman, Anne: Method for Obtaining Rapid Bacterial Growth in Cultures from Patients Under Treatment with Sulfonamides, J. A. M. A. 116: 941 (March 8) 1941.

8. Ziegler, E. R.; Osterberg, A. E., and Havig, M.: The Prothrombin Changes in Banked Blood, J. A. M. A. 114: 1341 (April 6) 1940. Quick, A. J.: The Prothrombin in Preserved Blood, ibid. 114: 1342 (April 6) 1940.

9. Strumia, M. M., and McGraw, J. J.: Frozen and Dried Plasma for Civil and Military Use, J. A. M. A. 116: 2378 (May 24) 1941.

TREATMENT OF GANGLION BY INJECTION OF CAROID A DANGEROUS PROCEDURE

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In December 1940 a new treatment of ganglion by the injection of a proteolytic enzyme (caroid) was described.¹ The method is as follows:

A suspension of pulverized enzyme in the ratio of 1 drachm of enzyme to each 5 cc. of water is prepared, and 1 minim of hydrochloric acid is added to 10 cc. of suspension. This is shaken vigorously and drawn into a 10 cc. syringe fitted with a 20 gage needle. The needle is inserted and the suspension is injected into the ganglion slowly. Usually 2 cc. is sufficient. In thirty minutes the liquefaction is completed, but the solution may be allowed to remain twenty-four hours without causing any distress and the patient may return the following day for aspiration. The ganglion may then be aspirated freely and the collapsed cyst irrigated with distilled water without removal of the needle. A light pressure dressing is applied.

I have under my care a patient who was treated in this manner and the result is a surgical tragedy. The report of this case is as follows:

REPORT OF CASE

On the evening of Aug. 8, 1941 a woman aged 22 consulted her physician on account of a ganglion on the dorsum of the right wrist which had been present for about four years. Two cc. of the suspension of caroid, as described, was injected into the ganglion. This was followed by immediate severe pain. The pain was excruciating, and efforts to withdraw the material by means of the needle were not successful. Consequently, about half an hour later under aseptic conditions a small stab incision was made into the ganglion and the material was expressed. The patient was sent home with a dry dressing applied to the wrist and given sedation. The next day the

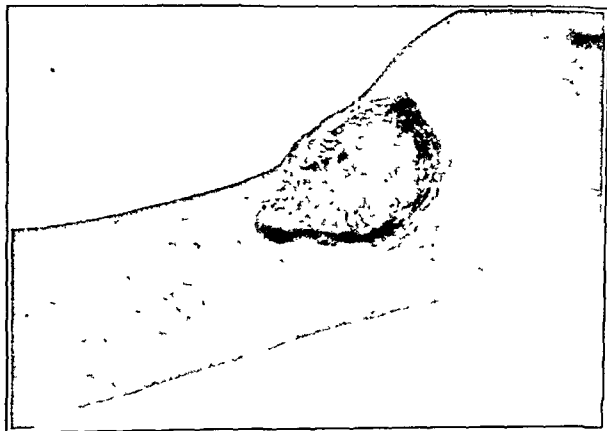


Fig. 1.—The wrist and hand seven days after the injection of caroid. The necrotic skin and subcutaneous tissue have been excised and the hand is moderately swollen. The margins of the wound are undermined.

wrist and forearm were red, hot and swollen, the patient felt sick and the temperature was elevated. The swelling increased rapidly and on the evening of the second day, about forty hours after the original injection, the patient was admitted to the Barnes Hospital.

From the Department of Surgery of the Washington University School of Medicine.

1. Ball, E. J.: A New Treatment of Ganglion. *Am. J. Surg.* 50: 722-723 (Dec.) 1940.

On admission the temperature was 38 C. (100.4 F.) and the pulse was 100 and the patient appeared to be moderately sick. The physical examination was negative with the exception of the right upper extremity, which was much swollen, moderately red and extremely tense, especially over the upper portion of the forearm and around the elbow. The redness and swelling extended up to the shoulder. On the dorsum of the wrist there was a small incision about $\frac{1}{2}$ inch long from which a small amount of thin purulent material could be expressed. Extending downward from this onto the dorsum

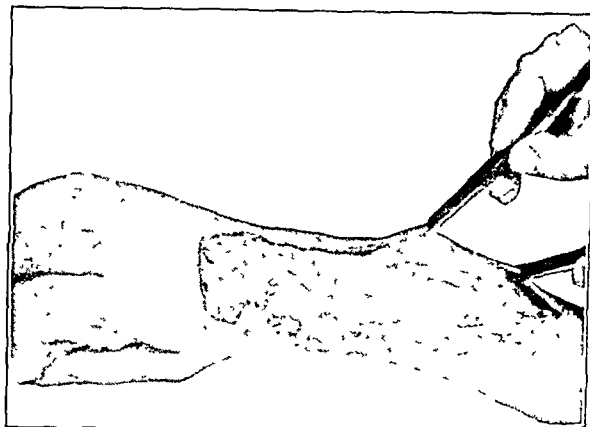


Fig. 2.—The forearm, wrist and hand eighteen days after the injection of caroid, showing the undermining of the skin by the necrosis of the subcutaneous tissues.

of the hand was an area of necrosis of the skin which was about 1 inch wide and 3 inches long. The swelling and redness extended up to the shoulder. The arm was so tense that gas bacillus infection was considered. However, there was no odor from the pus, no gas bubbles were expressed from the wound and smears showed a few slender bacilli and a few cocci. Consequently the entire upper extremity was immobilized in a massive hot wet dressing and elevated on two pillows. The patient was given 2 Gm. of sulfathiazole on admission and was given 1 Gm. every four hours afterward.

Laboratory examination showed the urine to be normal, the white blood cell count was 29,950, the differential count was stabs 17 per cent, segmented cells 76 per cent, lymphocytes 12 per cent and monocytes 4 per cent, the red blood cell count was 3,110,000 and hemoglobin was 62 per cent.

On the following morning the swelling and redness had extended above the shoulder and for a moderate distance onto the chest wall. The tenseness and pain in the arm were about the same as on admission. Consequently, under local anesthesia the incision on the dorsum of the wrist was extended upward for a distance of about 2 inches. The area of necrosis on the dorsum of the hand was also incised. After the incision through the skin had been made it was found that the subcutaneous tissues presented a peculiar grayish white gelatinous appearance. Apparently there was widespread necrosis of the subcutaneous tissues, the necrosis extending beyond the limits of the incision, but it was felt that the incision would afford ample drainage. Three Gm. of sulfanilamide was placed in the wound. The hot wet dressing and the sulfathiazole were continued (fig. 1). At this time the temperature was 38.8 C. (101.8 F.) and the pulse was 120. A blood culture which had been taken on admission showed no growth. That afternoon the patient was transfused, 500 cc. of citrated blood being given.

Culture of the wound on the day after admission and also ten days later revealed colon bacilli, bacilli of the subtilis group and Staphylococcus albus. No streptococci were found, but the patient entered on Sunday afternoon and the cultures were not made until she had had 5 Gm. of sulfathiazole by mouth. After the incision and drainage with the continued use of 1 Gm. of sulfathiazole every four hours the patient's general condition improved. The temperature ranged from 37 to 39.2 C. (98.6 to 102.6 F.) until August 17, when it dropped to normal and there was no significant rise in temperature.

after that date. The swelling and redness in the upper arm subsided gradually, but the region of the elbow remained swollen and red and tender. Consequently, on August 15 the elbow was aspirated and it was found that most of the swelling was in the subcutaneous tissues, only a few cubic centimeters of serosanguineous fluid being obtained. Cultures of this yielded no growth.

The improvement continued, but there was persistent swelling and tenderness over the dorsum of the forearm and on August 21 a probe was introduced beneath the skin and it was found that there was a cavity extending up almost to the elbow. Under local anesthesia the skin over this cavity was incised and the skin edges were folded back. It was found at this time that the grayish white necrosis of the subcutaneous tissue extended well over the dorsum of the forearm and almost up to the elbow (fig. 2). The wound was dressed with sulfanilamide powder every other day.

In the meantime the extensive area of necrosis on the dorsum of the hand had been excised with a knife. Under it was found a similar gray necrosis of the subcutaneous tissue. The necrosis of the subcutaneous tissue extended beyond that of the skin, so that it involved the tissues on either side to the border of the hand and down to the knuckles. The veins were thrombosed and necrosed. Apparently the necrosis did not extend through the tendon sheaths, nor did it involve the wrist joint. This is partly accounted for by the fact that from the time the patient was admitted to the hospital the hand and wrist were immobilized, first in a large wet dressing, then on a splint and finally in a plaster of paris mold.

On August 17 the patient had urticaria and complained of a sore throat, and on examination the tongue and pharynx were bright red. This was believed to be due to the sulfathiazole, which she was still taking. The sulfathiazole was discontinued, and the urticaria and sore throat cleared up promptly. The wet dressings were discontinued on August 14.

After the incision of the skin over the extensive subcutaneous abscess the wound was dressed daily with sulfathiazole powder and the necrotic tissue was excised or separated. The infection subsided and the convalescence was uneventful.

On September 25 Dr. J. B. Brown operated on the patient and drew the skin together over the forearm and sutured this part of the wound, while that part over the wrist and dorsum of the hand from which the skin and subcutaneous tissue had been lost by necrosis was covered with a split skin graft. This was of necessity applied directly over the sheaths of the extensor tendons. The graft was successful and the patient left the hospital on October 4, fifty-seven days after admission.

At present (Oct. 28, 1941) there is marked disability of the hand, as the fingers are quite stiff and the extensor tendons are adherent to the adjacent tissues.

COMMENT²

This case is reported because it is felt that the medical profession should be warned against the injection of material which is not known to be sterile. I believe that we are apt to forget sometimes how dangerous this can be. It is bad enough to place unsterile material in an open wound, but it is much more dangerous to inject it into the tissues. It is believed that the widespread necrosis was partly chemical from the enzyme and partly due to the bacteria which it contained.

Cultures of the caroid which was used in this instance were made and the material was found to be heavily contaminated with *Escherichia coli*, *Bacillus subtilis*, nonhemolytic streptococci and *Staphylococcus albus*. Two other samples of the material were obtained else-

where and were cultured and, strangely enough, these also were heavily contaminated with the same four organisms.

I have written to the American Ferment Company and in its reply it implies that sterilization is not necessary if the injection is properly and carefully done. This, of course, is an error, as, if the material contains pathogenic organisms, it does not make any difference how the injection is made. One is still implanting pathogenic organisms into the tissues. The firm states that "where the physician desires to employ a sterilized solution" the caroid powder can be sterilized by heating it for twenty to thirty minutes to the temperature of boiling water. Apparently, dry heat is recommended and the firm advises making fresh suspensions in sterile water just before using. It is my impression that this is not adequate sterilization for material which is to be injected and which may or may not contain spore-bearing bacteria. If this material can be sterilized without destroying the enzyme, this should be done before it is sold for injection or implantation in wounds. If it cannot be sterilized completely without destroying the enzyme, it should not be sold for injection or implantation in wounds.

STUDIES ON LYMPHOGRANULOMA VENEREUM INFECTION OF THE RECTUM

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The purpose of this paper is to call attention to the frequency of lymphogranuloma venereum infection of the rectum, to emphasize the rather characteristic clinical and diagnostic features and to comment on the therapeutic value of sulfanilamide and its derivatives.

Lymphogranuloma venereum typically is a subacute, or rather a chronic, venereal disease¹ characterized primarily by the bubo. Spontaneous recovery may occur, or the disease may lapse into a chronic indolent state. The course may be acute, almost typhoidal in character, and, particularly in extragenital infections, its true nature may not be suspected. Generalized

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Owing to lack of space this article has been abbreviated for publication in *THE JOURNAL*. The complete article appears in the authors' reprints.

Read before the Section on Gastro-Enterology and Proctology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Articles on lymphogranuloma venereum:

Stannus, H. S.: A Sixth Venereal Disease, London, Baillière, Tindall & Cox, 1933.

Piersol, G. M.; Rome, H. P., and Jones, C. A.: Lymphogranuloma Venereum: A Systemic Disease, *Tr. A. Am. Physicians* 53: 275, 1938.

Jones, C. A., and Rome, H. P.: Lymphogranuloma Venereum as a Systemic Disease, *Internat. Clin.* 2: 178 (June) 1938.

Eberhard, T. P.: Generalized Lymphogranuloma Inguinale, *Ann. Surg.* 107: 380, 1938.

Melzer, M.; Sipos, K., and Venkei-Wlaccisc, T.: Mit schweren Allgemeinscheinungen vergesellschaftetes, extragenitales, zum Tode führendes Lymphogranuloma inguinale, *Arch. f. Dermat. u. Syph.* 178: 124, 1938.

Gutman, A. B.: Systemic Manifestations of Lymphogranuloma Venereum with Illustrative Case Reports, *New York State J. Med.* 39: 1420 (July 15) 1939.

Harrop, G. A.; Rake, Geoffrey, and Shaffer, M. F.: New Clinical Conceptions of Lymphogranuloma Venereum, *Tr. A. Am. Physicians* 56, 1941.

Melzer, M.; Sipos, K., and Venkei-Wlaccisc, T.: A Fatal Case of Generalized Lymphogranuloma Venereum, *Orvosi hetil.* 83: 6 (Jan. 7) 1939.

Cannon, A. B.: Cutaneous and Systemic Manifestations of Lymphogranuloma Venereum and Its Differential Diagnosis, *J. Connecticut M. Soc.* 3: 329 (July) 1939.

2. Caroid, the preparation of papain (the active principle from the fruit of *Carica papaya*), originally marketed by the American Ferment Company for oral use as a digestive ferment, was rejected by the Council on Pharmacy and Chemistry in 1914 after extensive consideration (Caroid and Essence of Caroid Refused Recognition, Annual Reprint of the Reports of the Council on Pharmacy and Chemistry, 1914, p. 109) because the digestive activity of the product on proteins was found to be low and variable by the methods of testing employed at that time.

manifestations, such as fever and multiple arthritis, may be present. There is evidence of the occurrence of a subclinical form. For instance, the husband of our patient E. S. (case 1) has no clinical evidence of disease, gives no history suggestive of such infection and yet has been found, on the two occasions on which he has been tested, to give a strongly positive Frei reaction. His blood serum has been shown to possess neutralizing properties against the virus.²

The great frequency of lymphogranuloma venereum is not generally appreciated. In an Cleveland study³ in 1932 in a group of 1,010 patients hospitalized for various disorders found 58 (5.7 per cent) who gave a definitely positive Frei reaction. All of these gave a definite history of lymphogranuloma venereum. Gray and his associates⁴ in 1936, working in a city venereal disease clinic, obtained a positive Frei reaction in 3.4 per cent of the white and in 40 per cent of the Negro

In the female, rectal involvement apparently occurs usually as a direct extension of the disease by way of the lymphatic vessels from the vagina to the rectum. We have not been able to elicit a history of coitus per rectum from our female patients, although this has been reported by other investigators. One of our male patients, however, who had never experienced the heterosexual relationship had frequently practiced pederasty. This is in accord with the view that rectal involvement in the male is frequently due to direct infection.⁶

The outstanding symptom of the disease is rectal bleeding, usually small in amount but recurring daily for months and years. Occasionally the bleeding is rather copious. There is little or no pain until the development of stricture, when abdominal cramps and tenesmus are likely to appear. A seropurulent rectal discharge may be present. Perianal or perirectal abscesses with fistula formation constitute frequent complications.

TABLE 1—*Lymphogranuloma Venereum Infection of the Rectum in Ten White Patients**

Name	Sex	Age	History of Buboes	Lesion	Frei Reaction, Min	Neutralizing Power of Serum	Isolation of Virus	
							Source of Biopsy Specimen	Result
1 E S	♀	40	Positive	Reddened granular mucosa stricture 4.5 cm above anus	10	Strongly positive	Ulcerated mucosa below stricture	Negative
2 L P	♂	40	...	Friable, bleeding mucosa, colostomy, rectal stricture	8	Positive	Same, 5 mo later	Positive
3 I P	♀	38	Positive	No inflammation, smooth stricture 6.5 cm above anus	12	Positive	Lower margin of stricture	Negative
4 L C	♀	33	Positive	Inflamed, bleeding, polypoid mucosa, stenosis of anus	9	Very strongly positive	Lower margin of stricture	Positive
5 G R	♀	26	Positive	Stricture 5 cm above anus; mucosa below chronically inflamed	12	Strongly positive	Polypoid area of mucosa	Positive
6 M G	♀	28	Positive	Granular, bleeding mucosa, mucopurulent exudate, no stricture	11	Strongly positive	Lower margin of stricture	Negative
7 F B	♂	50	Negative	Numerous superficial ulcerations with bleeding, no stricture	7	Positive	Same, 2½ mo later	Positive
8 B S†	♀	49	Negative	Granular, bleeding mucosa no stricture	7	Positive	Rectal mucosa	Negative
9 C C.	♂	41	Negative	Inflamed, friable, edematous bleeding mucosa, profuse purulent exudate, no stricture	7	Positive	Rectal mucosa	Negative
10 P H	♀	50	Negative	Bleeding mucosa; benign polypoid stricture 8 cm above anus, colostomy	7	Positive	Rectal mucosa	Negative
					0	Positive	Mucosa below stricture	Negative
					7	Positive	Same, 13 mo later	Unsatisfactory

* The cases of F S, L P, I P, M G, F B and P H have been described in considerable detail in a previous publication (Rodaniche, End C., Kirsner, J. B., and Palmer, W. L. Lymphogranuloma Venereum in Relation to Chronic Ulcerative Colitis, J. A. M. A. 115: 517-519 [Aug 17] 1940). Further information regarding F S is included with the case reports appended to this article.
† Died; see text and case summary.
‡ Commercial antigen.

patients. Many of these did not give a positive history. In spite of the latter figure it is clear that the disease is no respecter of race or, indeed, of sex or age. Statistics vary as to the number of cases in which rectal involvement occurs, but D'Aunoy and von Haam⁵ considered the inflammatory stricture of the rectum to be "without doubt the most serious manifestation of venereal lymphogranuloma."

The rectal infection of lymphogranuloma venereum is extremely chronic and the statement has been made that while no patient dies from this disease all do, in time, die with it. The inflammation usually leads to the formation of a stricture which may produce complete obstruction. In a series of 76 patients with chronic inflammatory disease of the rectum, the rectosigmoid or the colon seen by us, 10 (13 per cent) were found to have lymphogranuloma venereum. All these patients were white, 7 were female and 3 were male.

Stricture formation is probably a rather late phase of the disease, and yet the diagnosis is rarely made before the stricture develops. It was present in 6 of our 10 cases (table 1). Although the date of the primary infection is usually unknown, the slow development of the lesion is indicated by the fact that the rectal symptoms may develop months or years after the appearance of buboes. The course of the disease is extremely chronic. We have succeeded in demonstrating the presence of virus in the rectal mucosa six, eight, thirteen and twenty-one years after the onset of symptoms. Case 1 illustrates these features beautifully. An interval of ten years elapsed between the development of the bubo and the appearance of rectal bleeding. During a second interval, of eleven years, bleeding continued and the rectal stricture remained essentially unchanged. The virus was then isolated from the rectal mucosa twenty-one years after the original bubo. The persistence throughout this twenty-one year period of a stubborn and moderately severe "rheumatoid arthritis" is of interest.

Lymphogranuloma venereum often produces an almost pathognomonic type of rectal stricture. It has been

2 Rodaniche, End C. The Neutralization Test in Lymphogranuloma Venereum, J. Infect. Dis. 66: 144-147 (March-April) 1940.
3 De Wolf, H. F., and Van Cleve, J. V. Lymphogranuloma Inguinale, J. A. M. A. 99: 1065-1071 (Sept. 24) 1932.
4 Gray, S. H.; Hunt, G. A.; Wheeler, Paul, and Blache, J. O. Lymphogranuloma Inguinale: Its Incidence in St. Louis, J. A. M. A. 106: 919 (March 14) 1936.
5 D'Aunoy, Rigney, and von Haam, Emmerich Venereal Lymphogranuloma, Arch. Path. 27: 1032-1032 (June) 1939.

6 Coutts, W. E., Opazo, Luis, and Montenegro, Maria D. Rectal Infection by the Virus of Lymphogranuloma Inguinale, J. Digest. Dis. 7: 287, 1940.

recognized under various names in the medical literature for almost a hundred years, first as hyperplastic infiltration of the rectum and later, more appropriately, as inflammatory stricture of the rectum. The stricture is produced by an inflammatory and cicatricial infiltration of the entire circumference of the rectum. It is usually rubberlike in consistency; the examining finger fits into it snugly, as into a tight glove. The mucous membrane covering the stricture is friable and edematous; ulceration, polyposis and fistulas may develop. Torpin, Pund and Sanderson,⁷ after studying 145 cases of lymphogranuloma venereum, said: "All patients with rectal strictures not due to trauma of hemorrhoidectomy have had a positive Frei test." However, we have observed at least 3 cases of so-called nonspecific ulcerative colitis involving the entire colon with rectal or sigmoidal stricture. There was no history of lymphogranuloma venereum in any of these, the Frei reaction was negative and the serum did not contain neutralizing bodies for lymphogranuloma venereum. Szilagyi⁸ noted a positive Frei reaction in 14 of 17 patients with rectal stricture, excluded 2 of the remaining 3 as unsatisfactorily examined and attributed the stricture in the third to syphilis because there was "a negative Frei reaction, a positive Kahn test and a positive rectal biopsy for lues. At autopsy the luetic etiology of the stricture was confirmed and other evidences of lues were found."

The stricture is located usually 3 to 8 cm. above the anus, although it may extend into the sigmoid flexure. In 1 of our patients (P. H.) there were two strictures, one in the rectum and one in the midportion of the sigmoid flexure. Another patient (L. P.) had been operated on elsewhere for a benign inflammatory stricture of the transverse colon. The pathologist had described the lesion in the resected specimen as "unusual." When the patient was seen by us some time later a rectal stricture was present and the Frei reaction was strongly positive. Rendich and Poppel⁹ and other investigators have described similar cases.

The rectal mucosa in the 4 patients without stricture was friable, edematous and indistinguishable proctoscopically from that of patients with nonspecific ulcerative colitis. If the validity of the diagnosis under the foregoing circumstances is questioned, reference may be made to case 5 (C. C., table 1), in which there was no history of buboes and no stricture; pederasty had been practiced; the Frei intracutaneous test gave a positive result on three occasions; the patient's serum was shown to contain antibodies capable of neutralizing the lymphogranuloma venereum virus, and the presence of the virus in the rectal mucosa was demonstrated by animal inoculation.

The question arises as to whether lymphogranuloma venereum is capable of producing acute fulminating ulcerative colitis. In 1 of our 10 cases death occurred. It was not possible to decide whether the lesion of the colon was due to lymphogranuloma venereum, to nonspecific ulcerative colitis or to both diseases. The patient (B. S.) gave no history of buboes, had undergone hemorrhoidectomy for rectal bleeding eighteen months before death, had diarrhea a year later and died after an acute illness with fever and diarrhea of six months' duration. The distal two thirds of the colon

was extensively ulcerated, the appearance being considered typical of nonspecific ulcerative colitis. It is unusual, however, in our experience for patients to die of ulcerative colitis without involvement of the entire colon. The Frei and the virus neutralization test had both given strongly positive results. An attempt to isolate the virus from a biopsy specimen of the mucosa was not successful, and unfortunately no further attempt was made at autopsy. To the best of our knowledge, no identical picture has been described in the literature on lymphogranuloma venereum, although Falconer¹⁰ described a somewhat similar but also inconclusive case. The acute febrile course is well recognized. Furthermore, there is no reason to expect the infection to remain localized in the rectum. Indeed, definite evidence of involvement of other portions of the colon has been cited previously in this paper. Lombart and Mafieru¹¹ have described a patient with a positive Frei reaction, a rectal stricture and multiple strictures of the ileum attributed by them to lymphogranuloma venereum. The attempt, however, to relate regional ileitis in all cases to lymphogranuloma venereum has not been successful. In 4 cases of regional enteritis studied by us the Frei reaction has been negative and attempts to isolate the virus from the diseased tissue or from a

TABLE 2.—Protection of Mice with Sulfanilamide and Sulfanilylguanidine Against the Lymphogranuloma Venereum Virus

Drug in Diet	Number of Mice	Percentage		
		Typical Symptoms	Weight Loss	Mortality
1% sulfanilamide .	20	0	11.2	0
1% sulfanilylguanidine .	20	0	11.6	0
Control	20	100	38.1	50

neighboring lymph gland, obtained at operation, have been unsuccessful.

The diagnosis of the genitoanorectal syndrome of lymphogranuloma venereum is simple if the possibility is kept in mind. Unfortunately, there exists an impression that it is to be found only in persons plying the oldest of all professions and in persons having intercourse with them. As a matter of fact, lymphogranuloma venereum, like all other venereal diseases, is fairly widely disseminated throughout the United States and, indeed, throughout the world. The most characteristic lesion, of course, is the unilateral or bilateral suppurating or nonsuppurating inguinal adenopathy, the bubo. The bubo is almost pathognomonic of lymphogranuloma venereum. Consequently the history of such a lesion or the residual scar is presumptive evidence of the disease. In our 10 cases, such a history was present in 6 and absent in 4 (table 1). A history of buboes is thus seen to be important but not essential. Esthiomene or genital elephantiasis, while not occurring in our series, would render the diagnosis self evident.

In our series the Frei reaction has been uniformly, consistently and persistently positive. We have used a mouse brain antigen prepared by one of us (E. C. R.) according to the usual technic from a strain of the virus isolated from pus aspirated from the enlarged inguinal node of a patient in the third week of the infection. Control tests have been performed regularly to exclude

7. Torpin, Richard; Pund, E. R., and Sanderson, E. S. Lymphogranuloma Venereum in the Female, *Am J Surg* 43: 688, 1939.

8. Szilagyi, D. E. The Etiology of "Inflammatory" Rectal Stricture, *Univ. Hosp Bull, Ann Arbor* 4: 12 (Feb.) 1938.

9. Rendich, R. A., and Poppel, M. H. Lymphogranuloma Venereum of the Colon, *Radiology* 33: 472 (Oct.) 1939.

10. Falconer, Bertil. Colite spécifique comme maladie subéquente de la lymphogranulomatose inguinale, *Acta dermat.* 19: 185 (May) 1938.

11. Lombart, A., and Mafieru, J. Sur la localisation de la maladie de Nicolas-Favre sur l'intestin grêle. Steno-es ileales multiples, *Ann. d'anat. path.* 16: 597 (May) 1939.

sensitivity to mouse brain without virus. In some cases tests have also been made with human antigen and with chick embryo antigen (lygranum).¹² The validity of the positive Frei reaction has been confirmed in all our 10 cases by a positive virus neutralization reaction and in 5 by isolation of the virus itself. In no instance

TABLE 3.—Summary of E. S.'s Case History

Date	Therapy	Frei Reaction	Virus Isolation	Rectum
1919 (bubo)				
1929-1933		..	.	Bleeding and stricture continuously present
1937		.	+	
May 1939		.	+	
June 6, 1939			0	
Nov. 10, 1939			+	
Nov. 10-20	Sulfanilamide, 4 Gm daily			Cessation of bleeding
Dec 24	Azotulfamide, 3.3 Gm daily			
Dec 2				
Nov. 1939				Gradual subsidence of inflammation; 1 or 2 formed stools daily, no bleeding
Mar. 1940				
March 1940 (conception)				
April 1940		..	+	
July 1940		.		Mild inflammation of rectal mucosa; stricture still present
Dec 1940 (delivery; infant's Frei reaction negative)				
May 1941		..	0	No recurrence of bleeding; mucosa normal; slight atrophic stricture
		(Lygranum)		

have we been confronted with a definitely positive Frei reaction without confirmatory evidence, such as a positive virus neutralization reaction. Furthermore, the validity of 66 negative Frei reactions has been substantiated by negative virus neutralization reactions.

In 1 of our 10 patients (M. G.) the cutaneous reactions, with both the mouse and the human antigen, were marginal in size, measuring respectively 7 and 5 mm. in diameter. The validity of the test was proved, however, by the demonstration in the serum of a strong neutralizing property for the virus. Pseudoreactions, consisting of allergic responses to mouse brain protein, have been eliminated by repetition of the test with human or chick embryo antigen. In addition to the 66 patients with nonspecific ulcerative colitis previously mentioned as having a negative Frei reaction we have studied a control group of 40 patients with diverse disorders such as peptic ulcer or carcinoma. All had a negative Frei reaction. We have come, therefore, to regard the Frei reaction as highly specific.

The virus neutralization test, previously described by one of us (E. C. R.),² is reliable but not as simple to perform or as inexpensive as the Frei test.

The most conclusive diagnostic procedure is the isolation of the virus from biopsy specimens of the rectal mucosa. The bits of tissue are well washed with sterile salt solution, macerated and suspended in salt solution, and the suspension is injected intracerebrally into mice. Typical symptoms occur in two to eight days. These consist of ruffling of the fur, arching of the back, tremors, ataxia, priapism, conjunctivitis, convulsions, cachexia and occasionally paralysis. Death ensues in about 50 per cent of the inoculated animals. The virus may be isolated from the brain; it may be transmitted from animal to animal, the virulence of the strain deter-

mined and the identity of the virus demonstrated by cross immunization experiments. These procedures are obviously more laborious than the Frei test, and negative results are less significant. However, in our series the virus was isolated before treatment in five of seven attempts in 5 cases. The identity of the five different strains of the virus thus obtained was established by cross immunization experiments.¹³ As a further control, eight attempts were made to isolate the virus from the rectal mucosa obtained for biopsy from 7 patients with nonspecific ulcerative colitis who had a negative Frei reaction. These were uniformly unsuccessful.

The differential diagnosis of lymphogranuloma venereum infection of the rectum is thus not difficult. The stricture itself is a characteristic lesion not readily confused with carcinoma. Other inflammatory conditions of the rectum, such as nonspecific ulcerative colitis, may lead to the formation of stricture, but the presence of a positive Frei reaction, with or without a history of buboes, is presumptive evidence that the rectal lesion is attributable to lymphogranuloma venereum. The coexistence of gonorrhea or syphilis or both should not confuse the issue. Gonorrheal proctitis does occur, but there is reason to doubt that gonorrhea ever invades the rectal tissue deeply enough to produce an "inflammatory stricture." The possibility of syphilitic proctitis must be considered, but this lesion appears to be rare. Indeed, in the light of our present knowledge of lymphogranuloma venereum, its very existence would be questioned if it were not for the case described by Szilagyi.⁸

TABLE 4.—Summary of C. C.'s Case History

Date	Therapy	Frei Reaction	Virus Isolation	Rectum
10/1/40		+	.	Edematous, friable, bleeding, purulent discharge
10/22		..	+	Unchanged
10/31 to 11/19	Sulfanilamide, 2.4 to 3.5 Gm daily		0	Mucosa entirely normal
11/19		..		
11/20-30		+		
11/26		..		Friable, bleeding, mucopurulent exudate
12/1-6	Sulfanilamide, retention enema daily, 2.4 Gm in 250 cc. of water			
12/7-4/5	Sulfanilamide retention enema 3 times weekly			
1/7/41	Sulfanilamide retention enema 3 times weekly	..		Definitely better; slight bleeding; mucosa no longer friable
2/3	Sulfanilamide retention enema 3 times weekly			Almost normal, few scattered areas of bleeding, no exudate
3/4	Sulfanilamide retention enema 3 times weekly	+	(Ly granum)	Practically normal
4/1	Sulfanilamide retention enema 3 times weekly		0	Slightly granular; practically normal
4/8	Sulfanilamide discontinued			
4/29		.	0	Several small healed areas but rectum practically normal

A complete discussion of the therapy of lymphogranuloma venereum is beyond the scope of this paper. However, we do wish to refer briefly to certain experimental studies and clinical observations bearing on the action of sulfanilamide and its derivatives. Numerous workers have described the successful treatment with

12 Grace, A. W.; Rake, Geoffrey, and Shaffer, M. F. A New Material (Lygranum) for Performance of the Frei Test for Lymphogranuloma Venereum, *Proc Soc Exper Biol & Med* 45: 259-263 (Oct) 1940.

13 Rodaniche, Enid C. A Comparison of Seven Strains of the Virus of Lymphogranuloma Venereum, *J Infect Dis* 69: 13-149 (Sept) 1941.

these drugs of experimental meningoencephalitis produced in mice and of inguinal buboes produced in other animals by the lymphogranuloma venereum virus.¹⁴ One of us (E. C. R.¹⁵) has found that mice may be protected completely from lethal doses injected intracerebrally by the administration of a diet containing 1 per cent sulfanilamide or 1 per cent sulfanilylguanidine (table 2). The control animals all showed typical meningoencephalitic symptoms, usually within ten days, and 50 per cent of them died within that period. The protected animals remained well during the ten days of drug therapy. A few of the animals treated with sulfanilamide had mild symptoms after the discontinuance of the drug, but all recovered. These animals were subsequently found, by reinoculation, to have developed a complete immunity to the virus. The mechanism of this immunity was studied by killing certain infected asymptomatic mice during a period of therapy and assaying the brain. The virus was recovered in high concentration in each instance, indicating, therefore, that although the chemotherapy had protected the animal from disease it had not accomplished an *in vivo* sterilization or an attenuation of the virus.

The foregoing experimental observations on the effect of sulfanilamide and its derivatives are in accord with our clinical experiences and, indeed, with those of other workers.¹⁶

In many respects the most interesting of our group is patient E. S. (table 3), from whose rectal mucosa the virus was recovered twenty-one years after the bubo and whose rectal disease is known to have been present for eleven years. To our surprise, the rectal inflammation subsided entirely and the stricture disappeared almost completely after (1) sulfanilamide and azosulfamide and (2) pregnancy, an event which in itself, occurring after twenty years of sterility, was somewhat surprising. The improvement appeared to have been initiated by the chemotherapy and to have been furthered enormously by the pregnancy.

In patient C. C. (table 4) the administration of sulfanilamide for twenty days seemed to produce a most striking transformation in the proctoscopic appearance. The disease process recurred, however, within a week after the discontinuance of the drug. The use of sulfanilamide retention enemas daily for six days followed by such enemas three times weekly for four months apparently resulted in complete healing of the proctitis. The disease has not recurred as yet after seven weeks.

In contrast to the first 2 patients, patient M. G., whose disease was of three years' duration and was unaccompanied by stricture formation, exhibited only slight improvement after the administration of 4 Gm. of sulfanilamide daily for two weeks and no improvement after receiving 3.3 Gm. of azosulfamide daily for twenty-seven days followed by 5.3 Gm. daily for fourteen days.

To another patient, G. R. (table 6), whose disease had been present for six years and had resulted in severe stricture formation, sulfanilylguanidine was administered almost continuously for more than two and one-half months in a dose of 10 Gm. daily. Improvement occurred slowly but nevertheless defi-

nately. There was a gain in weight amounting to 11 pounds (5 Kg.). The rectal pain disappeared. The number of stools decreased from fifteen to thirty daily to two to eight daily. The bloody rectal discharge disappeared. The stricture remained about 4 mm. in diameter, but it seemed softer. The adjacent rectal wall became thin and pliable. The mucosa at the site of the stricture and below remained granular and bled easily. The bacterial count per gram of feces decreased from an average of 20 to 50 million organisms, predominantly gram-negative bacilli, to an average of 100 to 600 thousand, predominantly gram-positive cocci.

TABLE 6.—Summary of G. R.'s Case History

Date	Therapy	Frei Reaction	Virus Isolation	Rectum
11/19/40	..	+	0	Chronic inflammation with stricture 5 cm above anus
2/4/41		..	+	Unchanged
3/4		+	..	Unchanged
		(Lys-granum)		
3/9/20	Sulfanilylguanidine, 10 Gm. daily			
3/18	.....	..	..	Little change
3/24	Sulfanilylguanidine, 10 Gm. daily resumed			
3/27	Sulfanilylguanidine, 10 Gm. daily continued	..	..	Unchanged
4/8	Sulfanilylguanidine, 10 Gm. daily, continued	+	0	Mucosa bleeding; stricture unchanged
4/22	Sulfanilylguanidine, 10 Gm. daily, continued	..	0	Less bleeding; slightly improved
5/6	Sulfanilylguanidine, 10 Gm. daily continued	.	0	Unchanged
5/13	Sulfanilylguanidine, 10 Gm. daily, continued	..	0	No bleeding; definitely better but stricture unchanged
6/2	Sulfanilylguanidine discontinued			

As yet we have not succeeded in isolating the virus of lymphogranuloma venereum from the rectal mucosa during or, indeed, after chemotherapy. The Frei reaction, however, has consistently remained positive, indicating presumably the persistence of the virus within the organism. Judging from the experimental and clinical evidence sulfanilamide and its derivatives are apparently unable to destroy all the virus in the body, but they do tend to inhibit its action in some unknown manner. It is not clear whether these drugs are merely virustatic or actually virucidal or whether some other mechanism is operative. Perhaps the complete destruction of the virus *in vivo* is prevented by its localization within the cell. Regardless of the mechanism of action, however, the therapeutic value of sulfanilamide and its derivatives seems definitely established.

CONCLUSIONS

1. Lymphogranuloma venereum is a common cause of proctitis and sigmoiditis, with or without stricture formation. Its course may be extremely chronic. The disease may simulate nonspecific ulcerative colitis.

2. The presence of lymphogranuloma venereum may be easily established by means of the Frei intracutaneous test provided the test is properly used and controlled.

3. Therapy with sulfanilamide and sulfanilylguanidine is of definite value, particularly in cases in which there is no stricture formation, but prolonged administration of the drugs may be necessary.

14 Levaditi, C. Chemotherapie experimentelle de lymphogranulomatose inguinale, *Compt. rend. Soc. de biol.* 129: 490, 1938.

15 Rodaniche, Enid C. Sulfanilylguanidine and Sulfanilamide in the Treatment of Lymphogranuloma Venereum Infections of Mice, *J. Infect. Dis.* to be published.

16 Shropshire, George. Sulfanilamide in the Treatment of Strictures of the Rectum Caused by Lymphogranuloma Venereum, *Illinois M. J.* 74: 153-156 (Aug.) 1938.

REPORT OF CASES

CASE 1.—E. S., a white woman born in 1900, was first seen by us in 1931. Her childhood had been normal, and she had been perfectly well until after her first marriage, in 1916. She had one child by this marriage, born in 1917. In 1918, when the baby was about a year old, she had a rather severe attack of "rheumatic fever." In 1918 or 1919 her husband left her. The patient had a rather profuse vaginal discharge at some time during this marriage and took daily douches for an indefinite period. She was unable to state whether the vaginal discharge appeared before the attack of "rheumatic fever." Although the discharge was sufficient to make the patient feel that she had contracted a venereal disease, a physician was not consulted. In time the discharge disappeared. In 1919 she had a swelling of the right inguinal lymph node, which was lanced by a physician.

The patient remarried in 1921. She denies having had sexual intercourse with any one other than her two husbands. The arthritis continued to cause her a good deal of trouble. In the course of time it involved nearly all her joints—fingers, elbows, shoulders, back, hips, knees and toes—without causing much deformity. The tonsils and the teeth were removed and various medications given without noticeable improvement. In 1930 she first noticed blood in the stool; this continued to appear until her admission to the hospital. Examination at this time disclosed a deep scar in the right inguinal region and a stricture of the rectum beginning just within the anus.

There was no significant change in the course of the arthritis or in the rectal stricture until November 1939. A biopsy of the rectal mucosa on June 6, 1939 failed to demonstrate the presence of the virus of lymphogranuloma venereum, but on November 10 the virus was successfully isolated. The repeated making of cultures and direct examinations of the stool during the nine years had shown no pathogenic parasites or bacteria except *Bacterium necrophorum*. On November 10 4 Gm. of sulfanilamide daily was prescribed, and medication was continued for ten days, when a rash appeared and the drug was discontinued. The patient reported that she felt "better than in a long time" and that the bleeding had ceased. Azosulfamide was then prescribed in doses of 3.3 Gm. daily, and medication was continued for eight days. The blood in the stools did not recur. Proctoscopic examinations during December 1939 and January and February 1940 revealed a gradual subsidence of the inflammation. By March 1940 the patient was having only one or two formed stools daily without blood. The Frei reaction continued to be strongly positive. At this time, nineteen years after her second marriage, the patient became pregnant. Her condition improved progressively, and there was no further bleeding from the bowel. In July 1940 examination revealed the stricture to be still present, with evidence of mild inflammation of the mucosa. The patient continued free of symptoms and on December 17 gave birth to a normal infant, whose Frei reaction was negative.

To May 1941 there has been no recurrence of the bleeding or of the arthritis, and the patient has remained well. Proctoscopic examination now discloses a thin, atrophic scar, with slight stricture formation about 2 cm. above the anus. The large proctoscope, 1.7 cm. in diameter, may be introduced without difficulty 22 cm. beyond the anus. The mucosa everywhere appears normal except for the scars mentioned. Two pieces of tissue were removed for biopsy in an unsuccessful attempt to demonstrate the presence of the virus. The patient attributes her recovery to the pregnancy, although the record suggests that it began with the administration of sulfanilamide and azosulfamide in November 1939. The Frei reaction is still strongly positive. The patient's husband, who gave a history of having had gonorrhea with complete recovery in 1916, before he met his wife, and who has never had buboes or any clinical symptoms suggestive of lymphogranuloma venereum, nevertheless gave a strongly positive Frei reaction on Nov. 30, 1940 and again on May 19, 1941.

CASE 4.—L. C., a white woman aged 33, had swollen inguinal lymph nodes shortly after marriage, eight years before admission. These nodes suppurated and were lanced by a local physician; draining sinuses persisted for several weeks. A year

later the stools suddenly became loose and watery, and they persisted so for two weeks; examination of the stools for parasites was said to have given negative results. The diarrhea recurred subsequently on numerous occasions, and blood and mucus were noted in the stools. It was said that six months before admission a rectal stricture had been dilated by a proctologist and that polyps had been removed from the rectum one month before admission. On physical examination the patient was seen to be severely emaciated. The anal region was reddened and excoriated; the anal ring was narrowed; the rectal mucosa appeared polypoid and inflamed. Examination of the stools for parasites, agglutination tests (typhoid, paratyphoid A and B, brucellosis) and two Wassermann and Kahn tests gave negative results. *Bacterium necrophorum* was absent from several stool cultures. Roentgenograms revealed active bilateral pulmonary tuberculosis and an extensive lesion involving the rectal ampulla, the nature of which was not determined. The Frei reaction was positive, and the lymphogranuloma venereum virus was obtained from a biopsy specimen of the rectal mucosa. Injection of tissue from the anal region into a guinea pig on three separate occasions revealed no evidence of tuberculosis. There was persistent secondary anemia. The value for total proteins was normal, but the albumin-globulin ratio was reversed. The patient was given sulfanilamide on the eighteenth hospital day in doses averaging about 5 Gm. daily, receiving a total of 68.7 Gm. in thirteen days. The level of free sulfanilamide in the blood rose to 10 mg. per hundred cubic centimeters. There was no definite clinical improvement, however, and the drug was withdrawn because of anorexia, cyanosis and a decrease in the red cell level. Subsequent therapy included several blood transfusions and the administration of sedatives, codeine and vitamins. The number of stools diminished from four to eight daily to two or three, and the inflammation of the rectal mucosa subsided. On the seventy-eighth hospital day the patient was given sulfanilylguanidine, 4.8 Gm.; this dose was used for six days, then 9.6 Gm. for three days, and then 2.4 Gm. for one day, a total of 60 Gm. in ten days. The level of free sulfanilylguanidine in the blood varied from 0.8 to 1.3 mg. and the level of total sulfanilylguanidine from 1.3 to 1.8 mg. per hundred cubic centimeters. The patient's condition remained unimproved, although the total bacterial count in the stool decreased.

CASE 5.—G. R., a white woman aged 26, first noted the passage of blood and pus from the rectum six years before admission. Her appetite gradually had failed, resulting in a progressive loss of weight amounting to 66 pounds (29.9 Kg.). She had undergone two operations for a rectal fistula and had been told of the presence of a rectal stricture. It was learned that at the age of 15 the patient had contracted syphilis and had received antisyphilitic therapy for five years. Marriage had been contracted at the age of 16 and had been terminated at the age of 20, approximately coincident with the development of the rectal bleeding. The patient denied having had sexual intercourse during the six years after divorce.

Physical examination revealed that the patient was thin and obviously ill. There were generalized abdominal tenderness and enlargement of the inguinal lymph nodes. Just to the right of the fourchette was a hard, tender, nodular mass, 2 by 2 cm., in the center of which was a small opening; a broad linear scar was noted on the left side of the fourchette. Proctoscopic examination revealed a stricture 5 cm. from the anus; the rectal mucosa was roughened and granular and bled easily. The Frei reaction was positive; the virus was not obtained from a biopsy specimen of rectal tissue, but it was found at a second examination several months later. The Wassermann and Kahn reactions were negative; the stools at first showed no parasites but later were observed to contain *Strongyloides stercoralis*. *Bacterium necrophorum* was not isolated from stool cultures. Routine agglutination tests gave negative results. There was moderate secondary anemia. Roentgen examination revealed a uniform narrowing and ulceration of the rectum and of the rectosigmoid portion of the colon, with dilatation of the bowel above this narrowing. Roentgenograms of the chest disclosed bilateral fibrocalcific pulmonary tuberculosis. Therapy included the use of a bland diet, sedatives, codeine,

ferrous sulfate, vitamins and a blood transfusion. The clinical condition was not greatly altered. The stools continued to be liquid and contained blood. The patient's temperature at first fluctuated between 98.6 and 100.5 F., gradually rose to 103 F. and then subsided to the previous level. Sulfanilylguanidine therapy was started on the seventh hospital day with a dose of 10 Gm. daily, the patient receiving a total of 106 Gm. in eleven days. The drug was withdrawn for four days because of a localized cutaneous rash; therapy was then resumed for sixty-nine days. The total intake was 800 Gm. The level of free sulfanilylguanidine in the blood gradually rose from 1.5 to 6.8 mg. and the level of total sulfanilylguanidine from 2.1 to 8 mg. per hundred cubic centimeters. There was a decided decrease in the total bacterial count of the stools but not a sterilization.

Improvement occurred slowly but nevertheless definitely. There has been a gain in weight amounting to 11 pounds (5 Kg.). The rectal pain has disappeared. The number of stools has decreased from fifteen to thirty daily to two to eight. The bloody rectal discharge has disappeared. The stricture remains about 4 mm. in diameter, but it seems softer. The adjacent rectal wall is now thin and pliable. The mucosa at the site of the stricture and below it is still granular and bleeds easily. There have been no toxic manifestations from the sulfanilylguanidine therapy, and the red blood count has varied from 4.5 to 5.1 million. Two Frei tests (one with lygranum and one with mouse antigen) during the course of treatment gave positive results. Virus studies were made on two occasions during this period, two and three bits of rectal tissue being removed each time, with negative results.

CASE 8.—B. S., a white woman aged 49, had undergone a hemorrhoidectomy one year and a half previously because of rectal bleeding. Six months prior to her initial visit at the University of Chicago Clinics she had begun to have diarrhea, with blood and mucus in the stools. Proctoscopic examination revealed that the rectal mucosa was granular and bleeding. Laboratory studies, including agglutination tests, examination of the stools for parasites and Wassermann and Kahn tests gave negative results. The Frei reaction was positive, but the virus could not be isolated from a biopsy specimen of the rectal mucosa. The patient's condition did not improve on treatment which included the use of a bland diet, sedatives and cod liver oil retention enemas, and she was admitted to the hospital. Her condition grew progressively worse. The diarrhea, producing numerous watery stools giving a strongly positive chemical reaction for blood, increased. The patient's temperature at first varied from 99 to 102.5 F., gradually rose to 104 F. and by the twenty-first hospital day had increased to 106 F. The white blood cell count decreased from 11,400 to 2,550. There was severe abdominal distention necessitating the use of continuous Wangenstein suction. Despite the administration of five blood transfusions and of large quantities of fluids parenterally the patient died on the twenty-second hospital day. Necropsy disclosed nonspecific ulcerative colitis with fibrinous peritonitis, pulmonary embolism with infarction of the right lower pulmonary lobe, dilatation of the right auricle and ventricle, anasarca and bilateral hydrothorax.

CASE 9.—C. C., a man aged 41, an unemployed salesman, entered the University of Chicago Clinics because of a purulent rectal discharge of three years' duration. He had undergone an operation for fistula in ano six months previously. He gave a history of having participated for many years in extragenital intercourse (pederasty), in which he had frequently assumed the feminine role. He denied having indulged in this practice for the past five years. There was no history of buboes or enlarged inguinal nodes. Proctoscopic examination disclosed the presence of a purulent exudate in the rectum and the sigmoid flexure; the rectal mucosa was friable and bled easily. Hospitalization was necessitated by the development of cardiac failure secondary to coronary occlusion.

The Frei reaction was positive, and the lymphogranuloma venereum virus was recovered from several biopsy specimens of the rectal mucosa. Sulfanilamide therapy, begun on the thirty-first hospital day with doses of 2.4 to 3.5 Gm. daily, was continued until a total of 73 Gm. had been administered in

twenty days. The level of free sulfanilamide in the blood rose to a peak of 13.5 mg. per hundred cubic centimeters. The inflammatory process gradually subsided, and at the termination of therapy the rectal mucosa appeared proctoscopically to be practically normal. The Frei reaction continued to be positive. Attempts to isolate the virus from several biopsy specimens of the rectal mucosa at this time were unsuccessful. The rectal inflammation recurred within a week after the discontinuance of sulfanilamide. It was not deemed advisable to resume sulfanilamide therapy in the dose previously given because moderate anemia had developed. Consequently, the patient was given nightly retention enemas containing 2.4 Gm. of sulfanilamide dissolved in 250 cc. of warm water. The rectal discharge again decreased, and the mucosal inflammation subsided. The retention enemas were given three times each week for the next four months. The patient continued to improve; the bowel movements decreased to one or two formed stools daily, the rectal discharge disappeared and proctoscopy revealed the mucosa to be almost normal in appearance. A Frei test done during the course of this treatment gave a positive result; on two occasions the virus was not obtained from several biopsy specimens of rectal tissue. The sulfanilamide retention enemas were discontinued after four months. To date, two months later, the rectal mucosa continues to present only a slightly granular appearance and the patient's clinical condition remains satisfactory.

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ABSTRACT OF DISCUSSION

DR. HERBERT T. HAYES, Houston, Texas: My associates and I have had experience with lymphopathia venereum for many years but have always been disheartened by the results of treatment. We have found the incidence of lymphopathia venereum much more frequent in the Negro race. We rarely see a stricture case in private practice. Negroes and especially Negro women make somewhat of an economic problem in almost any Southern city, because after they have had these strictures a good number of years most of them are partial invalids. I agree with the authors that gonorrhea and syphilis should not be considered a causative factor except in rare instances. Before we become aware of the existence of lymphopathia venereum we thought that gonorrhea was the probable causative agent because of its frequency in the rectal smears. Trauma, however, of an inflamed mucosa may at times set up an inflammatory process that will result in a stricture. I agree with the authors' observations on the use of sulfanilamide. We have found it has lessened the discharge, reduced the infection and made the patients feel better. We have observed spectacular results and an apparent cure in 2 cases of early infection of the rectum without definite stricture formation or in what we have frequently referred to as the prestricture stage. In the extremely bad cases I still advocate a colostomy. Patients who have had a colostomy and still have constitutional symptoms, such as anemia, arthritis and any of the sequelae that go with chronic infection, should have a resection of the rectum. Colostomy alone rehabilitates many of these patients. Those who are scar formers are the ones who are most likely to have trouble with lymphopathia venereum, and that is why the Negro race is so susceptible.

DR. MOSES PAULSON, Baltimore: Dr. Palmer and his associates have shown that bowel involvement due to the virus of lymphogranuloma venereum is not restricted to the Negro race, that it is more frequent than is generally appreciated, that at times it is indistinguishable from nonspecific ulcerative colitis and that by the demonstration of virus in intestinal material this disease can be separated from ulcerative colitis, thus delimiting ulcerative colitis and offering another approach to the former. These observations tend to clarify some obscure bowel disorders, and they are confirmatory of my researches in this field, reported between 1936 and 1939. The most conclusive diagnostic procedure is in the isolation of the virus from the involved tissue. Dr. Palmer's method differs only slightly from that of my bowel antigen method. A positive Frei test in one with colitis cannot be taken in itself to diagnose lymphogranuloma venereum colitis because it has definite limitations. The

positive Frei reaction may be produced by an unrelated virus infection antedating, coinciding or postdating the colitis, or by a healed virus infection. The same limitations apply to the neutralization test referred to by Dr. Palmer. There is one situation either ignored or not generally appreciated—that of anergy: a few who harbor this virus and never manifest a positive Frei reaction and those who give no Frei reaction while the involvement is either decidedly acute or severely chronic. Particularly in these groups is the detection of the virus in the bowel involvement by my bowel antigen or Dr. Palmer's method important. I have seen no true fibrotic stricture vanish regardless of the nature of therapy. I have found that the use of sulfonamide derivatives has not infrequently reduced the activity of the process, possibly by diminishing secondary infection.

DR. ARTHUR W. GRACE, New York: We have been studying lymphogranuloma venereum for nine years at the New York Hospital and have observed that the anal variety of the disease occurs two and a half times as frequently as the inguinal variety and is therefore the commonest of the symptomatic varieties. We have been using the sulfonamide derivatives successfully for the treatment of lymphogranuloma venereum since 1938 and have employed sulfanilamide, sulfathiazole and sulfaguanidine. Sulfathiazole has given the best therapeutic results with the least toxic reaction. It is administered in a dose of 1.5 Gm. three times a day for two to three weeks, followed by 1 Gm. three times a day for another three weeks. This regimen is sufficient to cure all the cases of the inguinal variety of the disease which we have treated. Cases of proctitis without stricture, the earliest manifestation of the anorectal variety of lymphogranuloma venereum, also yield readily to such treatment. The advent of stricture extends the duration of treatment of proctitis to as long as six or twelve months. In these cases several courses of sulfathiazole therapy are given with rest periods of one or two weeks between courses. In over 90 per cent of all cases of the anorectal variety of lymphogranuloma venereum the proctitis is cured or improved by the use of sulfathiazole. Fibrous strictures are unaffected. In their use of mice for evaluating the effect of drugs in the treatment of lymphogranuloma venereum in man, Dr. Palmer and his collaborators administered the drug orally. While performing similar experiments several years ago we noted that the mice did not always consume all of the material offered. By injecting a solution of the drug intraperitoneally, results were obtained similar to those of the authors. For the past four years we have been examining cases of ulcerative colitis first with the Frei test and later with the complement fixation test for lymphogranuloma venereum. No positive reaction has yet been obtained by the use of either test.

DR. ZACHARIAS BERCOVITZ, New York: It seems to me that the main value of this discussion is to direct attention to the fact that there are cases of ulcerative colitis in which the Frei test will be found to be positive. We have had that experience in our clinic at the New York Postgraduate Hospital. The Frei test is specific. It is valuable because it helps us to separate from the group of so-called nonspecific ulcerative colitis those whom we can treat specifically. Thus we can help more patients. With the rectal type of stricture we have found that Frei antigen in small doses, 0.1 cc. subcutaneously over a period of eighteen months to two years, has caused complete relaxation of the strictures and, when prior to the injection of the antigen we were unable to pass even a small finger into the rectum, at the end of that time we were able to examine with the standard size sigmoidoscope and find an essentially normal mucosa.

DR. H. F. SAWYER, Detroit: I wish to substantiate the findings in our clinic of those of the authors and the discussers. I particularly would like to ask Dr. Palmer what effect sulfanilamide has had on the extrarectal lesions. I myself have not seen any appreciable benefits.

DR. WALTER L. PALMER, Chicago: I was glad that Dr. Hayes brought out the great incidence of the disease, particularly the anorectal syndrome, in the Negro race. There is no doubt that it is much more frequent in them than in the white race. We wished to emphasize, however, that it does occur not infrequently in the white race. Dr. Paulson raises two questions: first, whether or not the presence of a positive Frei reaction proves that the lesion in the colon is lymphogranuloma venereum.

Of course it doesn't. The positive Frei reaction proves only that the patient has or has had—and we are inclined to think it means he still has—lymphogranuloma venereum. It does not prove the nature of the rectal lesion. With regard to negative Frei reactions, Dr. Paulson is quite right. It is possible for lymphogranuloma venereum to be present with a negative Frei reaction. It is, however, foreign to our experience. I was much interested in the remarks of Dr. Grace with regard to the relative incidence of the inguinal and anorectal varieties of lymphogranuloma. We have had no experience with the extrarectal infections and we have not tried sulfathiazole.

OPPORTUNITIES FOR POSTGRADUATE STUDY FOR NEGRO PRACTICING PHYSICIANS IN THE SOUTH

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There has been an increasing acknowledgment during the past thirty years of the need for keeping the general practitioners of this country abreast of medical advances so that there will not be too wide a hiatus between the development of new principles and technics and their actual application. This concern has been manifested by the American Medical Association since 1913 through its Council on Medical Education and culminated in a comprehensive study¹ of the educational programs of every state during the years 1937 to 1940. This need has also been emphasized by the Commission on Graduate Medical Education in its recent report,² and just recently the executive committee of the National Board of Medical Examiners has appointed a committee to study the question as to the best method of providing some kind of recognition for the progressive, up to date, efficient and well trained general practitioner.³

Even though such interest has been manifested by these organizations and by many medical schools and medical societies, practicing physicians have not apparently been too concerned about improving themselves. This is true for both Negro and white groups. The 1938 report of the Council on Medical Education and Hospitals of the American Medical Association⁴ stated that in twelve states with fairly accurate records only 25 per cent of the practicing physicians engaged in some form of graduate work during the year. In a study⁵ of five hundred and twenty-five Negro physicians, it was shown that only 40 per cent had engaged in such activities during a ten year period. This certainly shows a deplorable situation.

Many may be the reasons for this apparent indifference on the part of physicians, but the lack of available opportunities for such experiences may be one of the more important determining causes. This is particularly true for the two thousand five hundred odd Negro physicians practicing in the South, where first class hospitals are not numerous, where contacts with specialists are meager and where educational opportunities have been traditionally limited. In addition, many of these practitioners are the only ones in their communities.

1. Council on Medical Education and Hospitals: Graduate Medical Education in the U. S.: 1. Continuation Study for Practicing Physicians, 1937 to 1940, Chicago, American Medical Association, 1940.
2. Graduate Medical Education, Report of the Commission on Graduate Medical Education, Chicago, The University of Chicago Press, 1940.
3. National Board of Medical Examiners: Committee on Certification of General Practitioner, editorial, *The Diplomat* 13:114 (March) 1941.
4. Council on Medical Education and Hospitals: Medical Education in the United States, 1937-1938, *J. A. M. A.* 111:801 (Aug. 27) 1938.
5. Cornely, P. B.: Postgraduate Medical Education and the Negro Physician, *J. Nat. M. A.* 30:18-22 (Feb.) 1938.

and all too often their net incomes are far below the average for the country as a whole. This study, therefore, is concerned with the extent and development of postgraduate activities designed wholly or in part for Negro physicians in the South.

METHOD

Letters and questionnaires were sent to various organizations located in seventeen Southern states and the District of Columbia. This included twenty-six medical schools, seventeen constituent state medical societies of the American Medical Association, forty-five constituent local and state medical societies of the National Medical Association and twenty-six Negro hospitals fully or provisionally approved. After a number of requests, sixty-nine, or 60 per cent, of the one hundred fourteen organizations returned their questionnaires. The sixty-nine respondents included twenty-five medical schools two of which were the Negro institutions Howard and Meharry, sixteen white state medical organizations, fifteen Negro medical societies and thirteen Negro hospitals. The questionnaires received were analyzed and certain pertinent data about the postgraduate activities in each state for which there is information available have been recorded in the accompanying table. A fuller description of the postgraduate activities in these states will be the subject of a subsequent paper.

ORGANIZATION AND ADMINISTRATION OF PROGRAMS

Only twelve of the seventeen Southern states and the District of Columbia have developed formal postgraduate programs for Negro physicians which are in existence at present and which are held with some degree of regularity. The five states which do not appear to foster regularly such activities are Delaware, Maryland, Mississippi, Oklahoma and West Virginia. Occasionally, however, organizations in some of these states have offered courses. The Maryland State Tuberculosis Association in 1940 cooperated with the District Tuberculosis Association and the Medico-Chirurgical Society of Washington in sponsoring a three day seminar for Negro physicians, and to this came twenty-three Maryland physicians. Such cooperation is being repeated in 1941. In 1936 the Mississippi State Board of Health, with the aid of the U. S. Children's Bureau, offered a two week course in maternal and child care throughout the year, on the circuit plan, for the Negro physicians in the state. Fifty-five of the fifty-eight Negro physicians in Mississippi attended these courses.⁶ In addition, the state health department in cooperation with the Commonwealth Fund sent a Negro physician to Homer G. Phillips Hospital for a ten week course.

There were in the twelve states and the District of Columbia twenty-six opportunities for Negro practicing physicians to engage in continuation study. Of these, nine were sponsored by seven Negro organizations and seventeen by fifteen white groups. Included in the Negro agencies were three hospitals, two medical societies and two medical schools, while the fifteen white groups comprised four medical societies, five medical schools, one board of health and five tuberculosis societies.⁷ Thus it is seen that white organizations, particularly the medical schools and voluntary health agencies, have been more active in this field of endeavor than Negro groups. Of particular significance

is the fact that four Southern state medical societies, namely Arkansas, Florida, Louisiana and Tennessee, have opened certain of their postgraduate facilities to Negro physicians. The attitude of the Florida Medical Association, Inc., is commendatory and deserves a place of prominence. Up to 1940, Negro physicians were not admitted to the one week postgraduate seminar held annually by the society since 1933. In 1940 the last two days of the seminar were opened to Negro physicians and in 1941 the whole course was made available to all duly licensed Negro physicians on the same basis as white physicians. This arrangement has proved satisfactory and should certainly be given a trial by other state medical societies.

Attention must be called to the fact that in only three of the twenty-six opportunities available were the courses of an itinerant nature so that the instruction was taken to the physician in or near his local community. Practically all the courses, therefore, were held in definitely located centers, so that interested physicians had to commute daily or absent themselves from their practice for the duration of the course. This state of affairs compares unfavorably with the situation for white physicians. According to the report of the American Medical Association,⁸ of the one hundred and ten opportunities for postgraduate medical education available in forty-three states, fifty were held in proximity to the physician's home.

SUBJECTS AND INSTRUCTIONS

The subjects offered in these courses may be grouped in five categories. The most common was general subjects of medicine, which was included in eleven of the twenty-six courses. This was followed by obstetrics and gynecology, pediatrics and tuberculosis, which were included either separately or in various combinations in ten, and venereal diseases in eight programs. Next to the general subjects in medicine, the most common combination presented was that of tuberculosis, syphilis, pediatrics and obstetrics. These two types of offerings were the selection in seventeen of the twenty-six courses. It would thus appear that the choice of topics has been based primarily on their importance as disease problems among Negro groups and not particularly on the needs of general practitioners. Nor is there an attempt to organize these courses so that at the end of a certain period of years, let us say four or five, physicians who have regularly attended the courses will feel that they have been educationally refreshed in all sections of their knowledge. In these twenty-six programs, preclinical courses have seldom been included, and such special subjects as malaria, endemic typhus, nutrition and diet, degenerative diseases such as cancer, heart disease and diabetes, which are of importance in the South and in the Negro group, are infrequently touched on.

The instruction in these programs has been through lectures, discussions and clinics. It appears from this analysis that better than half of these offerings have unfortunately depended on lectures and discussions for their teaching procedure. Here again much needs to be done in the organization and presentation of these courses so that they will be most attractive to general practitioners. It has all too often been assumed that men in practice may be taught successfully by the same methods as undergraduates in medicine. This is to be questioned, since even the teaching of medical students is not on too firm a footing.

6. Such a project was also put into operation in 1937 in Georgia and in 1938 in Alabama.

7. These sponsoring agencies, as may be noted in the table, were helped by a variety of other institutions and groups.

8. Council on Medical Education and Hospitals: *Graduate Medical Education in the U. S.*, p. 23.

Continuation Courses for Negro Practicing Physicians in the South, 1939-1940

State	Sponsoring Agencies	Date of Initiation	Subjects	Duration of Course	How Often Given	Registration Fee	Yearly Attendance	Contributing Agencies and Funds
Alabama								
Tuskegee	John A. Andrew Clinical Society	1912	General	1 week	Annually	\$3	200-250	John A. Andrew Clinical Society, Tuskegee Institute
Arkansas								
(State circuit)	State medical society and State board of health	1905	Obstetrics and pediatrics	1 day weekly, 6 times	Annually	None	Not given	State medical society, state board of health U. S. Children's Bureau
District of Columbia								
Washington	D. C. Tuberculosis Assn., Social Hygiene Society, Maryland, Tuberculosis Assn., Medico-Chirurgical Society, Howard University College of Medicine	1940	Tuberculosis, syphilis, obstetrics, pediatrics	3 days	Annually	None	100	Same as sponsoring agencies
Washington	Howard University College of Medicine	1937	Venereal diseases	3 months	4 times annually	\$20	20 (limited)	College of Medicine, U. S. Public Health Service, District of Columbia Health Department, and Freedmen's Hospital
Florida								
Orlando	Florida Tuberculosis and Health Assn.	1939	Tuberculosis	1 week	Offered only once	None	10	Tuberculosis Association and state tuberculosis sanatorium
Jacksonville	Florida Tuberculosis and Health Assn.	1940	Tuberculosis, syphilis, obstetrics, pediatrics	3 days	Annually	None	35	Tuberculosis Association, National Tuberculosis Assn., state board of health and Julius Rosenwald Fund
Jacksonville	Florida Medical Association, Inc.	1940	General	1 week	Annually	\$5	20-30	Florida Medical Association, Inc.
Tallahassee	Florida A. & M. Clinical Association	1929	General	3 days	Annually	\$3	50-75	Clinical Association, Florida A. & M. College
Georgia								
Augusta	University of Georgia School of Medicine	1935	General	2 weeks	Annually	\$1 for certificate	25-50	Julius Rosenwald Fund for first two years, and School of Medicine
Kentucky								
Louisville	University of Louisville School of Medicine	1936	Medicine, pediatrics, obstetrics	2 months	Annually	None	Limited to 8 M.D.'s	School of Medicine
Louisiana								
New Orleans	Flint Goodridge Hospital	1906	General	2 weeks	Annually	\$5	40	Flint Goodridge Hospital, National Tuberculosis Assn. private contribution
New Orleans	Flint Goodridge Hospital	1938	General	Monthly seminars	Through out the year	None	20	Hospital
New Orleans	Flint Goodridge Hospital	1938	Tuberculosis	Biweekly lectures	Through out year	None	25% of M.D.'s in city	Hospital
State circuit	Louisiana State Medical Society	1936	Obstetrics, pediatrics, cancer	Five 2-hour sessions	Annually	None	5-15	Medical Society, State Board of Health
Missouri								
St. Louis	St. Louis University School of Medicine	1937	Internal medicine, general surgery, obstetrics, pediatrics, physical diagnosis	4 weeks	Annually	\$15-\$20	25-40	School of Medicine, St. Mary's Infirmary
St. Louis	Homer G. Phillips Hospital	1937	Obstetrics, tuberculosis, syphilis	4 days	Annually	None	60-115	Hospital, Julius Rosenwald Fund, St. Louis Health Department and Federal Government
St. Louis	Tuberculosis and Health Society of St. Louis	1939	Obstetrics, tuberculosis, syphilis, pediatrics	3 days	Annually	None	90-142	Tuberculosis and Health Society, Missouri Tuberculosis Assn., Missouri Medical Forum, and St. Louis Health Department
North Carolina								
Durham	Duke University	1905	Venereal disease, obstetrics, gynecology, pediatrics, tuberculosis	3 days	Annually	\$5	2-40	Duke University, E. C. Cohn Hospital, North Carolina State Department of Health

Continuation Courses for Negro Practicing Physicians in the South, 1939-1940—Continued

State	Sponsoring Agencies	Date of Initiation	Subjects	Duration of Course	How Often Given	Registration Fee	Yearly Attendance	Contributing Agencies and Funds
South Carolina								
Orangeburg....	South Carolina State Tuberculosis Assn.	1941	Syphilis, tuberculosis, obstetrics, pediatrics	3 days	Annually	None	38	State Tuberculosis Assn., National Tuberculosis Assn., State Board of Health, Palmetto Medical Assn., U. S. Public Health Service
Charleston....	Charleston Tuberculosis Assn.	Not given	Tuberculosis	Not given	Annually	None	Total of 50 physicians have attended all courses	Tuberculosis Association, Pine Haven Sanatorium
Tennessee								
Nashville.....	Meharry Medical College	1938	General	2 weeks	Annually	\$10	10-14	Medical College
Nashville.....	Meharry Medical College	1940	Pediatrics	2 weeks	Annually	None	Not given	South Carolina State Health Department and Medical College
State circuit...	Tennessee State Medical Association	1937	Obstetrics and pediatrics	Weekly lecture for 16 weeks in each of 10 districts	Throughout year	\$5	57-84	State Medical Society, Commonwealth Fund, Medical Schools of Vanderbilt and University of Tennessee
Texas								
Prairie View...	Texas Tuberculosis Assn.	1937	Tuberculosis, syphilis, obstetrics, pediatrics	4 days	Annually	None	50-114	Tuberculosis Association, National Tuberculosis Association, State Board of Health, and Prairie View College
Virginia								
Richmond.....	Medical College of Virginia	1931	General	2 weeks	Annually	\$10	18-42	Medical College and General Education Board

The duration of the courses varied from three days to a year. The majority of the courses were under one week in length, since ten, or almost half, were in this division. The remainder fell into the following categories: four of one week's duration, six of two weeks, three of one to three months and two throughout the year, and for one no information was given. The two which were offered throughout the year consisted of monthly or biweekly seminars for local physicians.

FINANCIAL SUPPORT AND PHYSICIANS' INTEREST

A variety of organizations have given financial aid and provided personnel and facilities for these meetings. Among these may be mentioned the United States Public Health Service, the United States Children's Bureau, the Julius Rosenwald Fund, the National Tuberculosis Association, the Commonwealth Fund, the General Education Board of New York City and the various local and state official and nonofficial groups. As a result of this, it is found that fourteen, or more than half, of these programs were offered to Negro physicians free of charge. The remaining twelve had extremely moderate registration fees as follows: one of \$1, one of \$3, six of \$5, two of \$10, one of \$15 and one of \$20. From this standpoint, it would appear that Negro physicians have no complaint to offer. The same situation obtains for white physicians where itinerant courses are concerned. Of the fifty courses offered in 1938-1939, thirty-seven charged no registration fee, while the remainder had fees varying from \$2 to \$15. However, for continuation courses featuring clinical material and held at one center, white physicians had to pay larger sums, since in forty-nine of the sixty programs fees varied from \$5 to \$400.⁹

It is difficult to obtain an accurate idea of the total attendance of Negro physicians practicing in the South who participated in these courses in one particular year.

In some of the questionnaires the attendance reported included other professional groups such as those of dentists and nurses, while in others the attendance included physicians practicing in Northern states. The total attendance as reported by these states numbered approximately 1,200 physicians for the year 1939-1940. On the basis of this, it could be assumed that possibly from 800 to 1,000 Negro physicians practicing in the South attended courses offered in that year. This would mean that from 30 to 40 per cent of the Negro physicians in this geographic area availed themselves of these educational opportunities. This percentage compares favorably with the already quoted percentage of 25 for white physicians for the year 1938. Although this comparison is good, it must be admitted that there is a sizable percentage of physicians who are not making any effort to improve themselves continually.

COMMENT

This analysis shows that even though many Southern states have developed postgraduate programs for Negro physicians, the number of these activities is admittedly insufficient; yet facilities and personnel are available in the South which could be developed to the advantage of these practitioners. This applies both to Negro and to white organizations, and certainly the eventual solution of this problem depends on the active and whole hearted cooperation of these two groups. What then are possible approaches to this problem? The following suggestions may be put forth:

1. Negro hospitals, particularly those which have been approved by the American Medical Association and the American College of Surgeons, should develop refresher courses for physicians in their locality. The example of Flint Goodridge Hospital of Dillard University is one worthy of emulation.

2. The medical schools in the South should become more concerned about the postgraduate education of Negro physicians. Of the twenty-five medical schools in this area, only five are at present offering courses for

⁹ Council on Medical Education and Hospitals: Graduate Medical Education in the U. S., p. 42.

Negroes. Certainly it would appear that the other twenty schools would develop programs comparable to those of the Medical College of Virginia, the St. Louis University School of Medicine and Duke University School of Medicine.

3. The examples which have been set by the state medical association of Florida and those of Arkansas, Louisiana and Tennessee should gradually cause other Southern state and county medical societies to open some of their postgraduate activities to Negro physicians. Just as the Florida Medical Association, Inc., gradually opened its postgraduate seminar to Negro physicians in the state, so other associations could experiment in this direction.

4. Negro medical societies also have a responsibility in this sphere which thus far they have neglected. These organizations should develop annual refresher courses of three to five days' duration for their membership. By pooling the resources of their communities, this could be done without too great an outlay of money. The appointment of strong and active postgraduate committees to explore possibilities and formulate plans would be steps in the right direction.

5. The postgraduate programs which are at present in operation should be reevaluated so that the educational needs of the general practitioner are met more fully. Refresher courses would serve a more useful purpose if they were so organized that they would cover definite units of study yearly and bring up to date such basic knowledge as bacteriology, pathology and physiology, in addition to reviewing new technic, methods of treatment and diagnosis in the fields of internal medicine, obstetrics, minor surgery, venereal diseases and the like. Only in this manner will refresher courses have a purposeful meaning.

SUMMARY

1. Twelve of the seventeen Southern states and the District of Columbia have at present postgraduate programs, which are held with some degree of regularity, designed as a whole or in part for Negro physicians.

2. There are in these twelve states and the District of Columbia twenty-six opportunities for Negro physicians to engage in continuation study. Nine of these have been sponsored by seven Negro organizations and seventeen by fifteen white groups.

3. General subjects in medicine are the most popular, since these were offered in eleven of the twenty-six courses. Obstetrics, pediatrics, tuberculosis and syphilis are the other topics most commonly included.

4. The courses vary in length from three days to a year, but almost half are under a week's duration.

5. The majority of the courses are offered free of charge, and those which require a fee have a nominal one varying from \$1 to \$20.

6. Approximately 30 to 40 per cent of the physicians practicing in the South availed themselves of these educational opportunities in 1939-1940.

Industrial Research Laboratories.—Some of the facts relating to the United States are striking. In 1940 two thousand two hundred industrial corporations maintained three thousand five hundred research laboratories which employed seventy thousand workers at a cost of seventy-five million pounds. In these, particular emphasis is directed toward personal qualities of the prospective employee as distinguished from scholarship. Creative urge, receptiveness to new ideas and intellectual integrity are particularly important.—The Spiritual Value of Research, *Nature*, Dec. 6, 1941.

Clinical Notes, Suggestions and New Instruments

A TRANSFUSION REACTION FOLLOWING THE USE OF UNIVERSAL BLOOD

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It is difficult to evaluate the frequency and severity of reactions ascribable to the presence of isoantibodies in universal blood (O blood). Minor reactions may occur frequently while severe and fatal reactions with demonstrable hemolysis or agglutination are relatively rare. The statistical approach to the problem is obviously difficult. However, the literature contains a number of reports some of which state observations only during and following reactions while others include detailed laboratory data necessary for a study of the factors involved. Without attempting to review the literature completely, we shall cite some papers pertaining to the question of the high titered donor.

Levine and Mabee¹ and Freeman and Whitehouse² on the basis of their "in vitro" studies cautioned against the use of "dangerous" universal blood. Wildegans³ discussed the universal donor and referred to several specific accidents. An extensive analysis of reactions to transfusions of group O blood was published in 1935 by Gesse.⁴ This article presents a collection of 46 cases presenting severe hemolytic reactions of which 20 terminated fatally. Muller and Balgairies⁵ reported a transfusion with shock following the administration of universal blood of high anti-A titer to a group A recipient. DeGowin⁶ reviewed his experiences with 3,500 transfusions and commented on one hemolytic reaction in detail in which high agglutinin titers were thought to be responsible. Levine and Katzin,⁷ after corresponding with 350 hospitals, found that 225 used universal donors to some extent and that only 8 used tests to ascertain agglutinin titers. They mentioned three known reactions from this source. MacKay⁸ described a case of acute agranulocytosis in which a transfusion with universal blood was given. The patient afterward became icteric, and erythrophagocytosis was noticed in the blood smear. Schürch and Willenegger⁹ presented fourteen reactions in one hundred and sixty-seven transfusions. Twelve reactions occurred when universal donors were used for A recipients, and 2 of these with well defined hemolytic signs were definitely shown to have high anti-A agglutinin titers. The others were not determined. In an analysis of 3,000 transfusions, Wiener and his co-workers¹⁰ mentioned the dangerous universal donor as a source of reactions.

Through the courtesy of Drs. McKay and Wolfe, we have had the opportunity of studying a hemolytic reaction in a man aged 77 following the transfusion of universal blood.

The patient presented a large, indirect, complete inguinal hernia on the right side which he had attempted to support by means of a truss for the past twelve years. It had always been reducible until two weeks before admission, at which time he complained of pain in the lower part of the abdomen, diarrhea and inability to reduce the hernia. He was hospital-

From the laboratories of the Buffalo General Hospital.

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ized in another institution and the hernia was reduced mechanically, relieving him of his symptoms until five days prior to admission to our hospital. For a period of several months he had been taking digitalis for cardiac irregularity.

On admission the temperature was 99.8 F. rectally, the pulse was 50 and irregular and the respiratory rate was 18. The blood pressure was 140 systolic and 70 diastolic. He complained of severe pain in the lower part of the abdomen without nausea or emesis. On examination, besides the slow irregularity of the cardiac rhythm, the hernia was found to be nonreducible and he was immediately operated on and an incarcerated hernia was relieved and 6 inches of devitalized small intestine was resected followed by entero-anastomosis.

On July 4, 1941, the first postoperative day, signs of ileus developed and duodenal decompression was instituted. The temperature was 103 F. and the blood pressure 150 systolic and 64 diastolic. At 10:30 p. m. a blood transfusion was started. The patient belonged to blood group A, blood type MN, Rh positive. Cross matching was carried out by mixing the cells of the donor and the serum of the patient and keeping the mixtures at room temperature as well as at 37 C. (98.6 F.) for one hour, after which time the tubes were spun down. The cells of the donor were perfectly compatible toward the serum of the patient. A subsequent determination of the titer of the antibodies of the donor's plasma revealed an anti-A titer of 1:128 and an anti-B titer of 1:64 as determined by test tube titration.

The patient experienced a severe chill and a rise in temperature to 106.8 F. after 250 cc. of citrated O blood had been administered. Slight cyanosis was present. The respirations were labored and the pulse weak and thready. The blood pressure was 116 systolic and 68 diastolic.

By 1 o'clock the following morning the blood pressure had fallen to 80 systolic and 40 diastolic and distinct diaphoresis and pulmonary edema were noticed. Treatment consisted of morphine, atropine and oxygen. During the day he responded slightly and the blood pressure returned to 110 systolic and 56 diastolic following the administration of 500 cc. of diluted pooled plasma and 1,000 cc. of 5 per cent dextrose and saline solution. Blood chemistry determinations before the plasma was given revealed dextrose equal to 156 mg. and urea nitrogen equal to 25 mg. per hundred cubic centimeters and sodium chloride equal to 487 mg. per hundred cubic centimeters. The carbon dioxide combining power was 53 volumes per cent. The icteric index of the patient's plasma was found to be 20 with slight hemolysis and biphasic van den Bergh of 0.6 mg. per hundred cubic centimeters. A single specimen of urine was observed to be orange colored with no red blood cells.

The next day therapy with intravenous infusion of saline solution and sodium sulfapyridine was started after definite signs of pulmonary consolidation had been discovered in the left base. The duodenal decompression was continued and the abdomen remained soft.

From July 7 to July 9 the patient was stuporous and incontinent. A blood culture taken on July 6 was reported negative. On July 7 the icteric index was 50 and the van den Bergh biphasic and quantitatively 2.8 mg. per hundred cubic centimeters. The hemoglobin level remained constantly over 100 per cent. The urine looked amber and clear and the sediment showed 7 to 10 red blood cells per high power field. Pulmonary edema became severe and the patient died July 9.

COMMENT AND SUMMARY

About 250 cc. of blood of group O (universal blood) was transfused into a man aged 77 belonging to blood group A. The immediate reaction to the transfusion consisted of a sharp rise in temperature. The increases in the icteric index and the quantitative van den Bergh reaction point to definite hemolysis. The serum of the patient did not influence at all the cells of the donor, as demonstrated by careful cross matching even at 37 C. (98.6 F.). However, the serum of the donor contained a relatively high titer of anti-A antibodies, the presence of which we believe was the cause of the reaction observed. We feel, therefore, that this case demonstrates the fact that O blood containing potent isoantibodies cannot necessarily be considered safe universal blood.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE TREATMENT OF VERTIGO AND SYNCOPE

SOMA WEISS, M.D.

BOSTON

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

Vertigo and syncope are common symptomatic manifestations, yet many physicians possess inadequate knowledge not only of the treatment but also of the fundamental nature of these states. Although usually vertigo and syncope are unrelated both in their pathogenesis and in their treatment, it is justifiable to consider them together because they are confused with each other. Vertigo, in a strict sense, describes an experience in which the patient has the sensation that the outer world is revolving about him ("objective vertigo") or that he himself is moving in space ("subjective vertigo"). The latter experience can be reproduced simply by subjecting the patient to rapid whirling movements of some duration. Frequently, however, vertigo is used erroneously as a synonym for "dizziness" or "giddiness" to indicate an unpleasant sensation of disturbed relationship to surrounding objects in space. The terms "dizziness" and "giddiness" should be restricted to an abnormal sensation of unsteadiness characterized by a feeling of movement within the head without the experience of the external world or the patient himself being in motion. Dizziness or giddiness, as a subjective sensation, should not be confused with the sensations associated with ataxia. At times true vertigo and dizziness can coexist.

On the basis of such a definition, true vertigo has more specific diagnostic significance in neurologic and psychiatric disturbances than does dizziness or giddiness. Vertigo is usually accompanied by difficulty with locomotion and at times with a sensation of sinking. However, vertigo as a rule has no relation to syncope, while dizziness is frequently a *forme fruste* manifestation of syncope, although dizziness is frequently associated with bodily states independent of syncope. Dizziness is often a manifestation of any one of a number of conditions, which include a minor or severe injury to the head, arterial hypertension, cerebral arteriosclerosis, cerebrovascular accidents, intoxications, petit mal or grand mal epilepsy, cerebral neoplasms or abscesses, epileptic aura, psychoneurosis and psychosis.

Because patients describe vertigo or giddiness indiscriminately as "swimming," "reeling," "dizziness," "light headedness," "faintness," "drunk feeling" or "sense of foolishness" the first step in the treatment of vertigo and dizziness is the proper interpretation of the patient's complaints. Without this, effective treatment is not possible.

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VERTIGO

From a broad physiologic point of view, vertigo is the result of certain types of disturbances of the nervous mechanisms involved in the maintenance of normal body balance. While the "master organs" in maintaining balance are the vestibular portions of the labyrinths with their nerve connections through the vestibular portion of the eighth nerve to the vestibular nuclei in the medulla oblongata, important contributory roles are played by the eyes, the muscles of the head and neck, the deep tendon and the joint sensations in general, and by the cutaneous tactile sensations. It should also be recalled that the vestibular nuclei have intimate anatomic and functional connections with certain parts of the cerebellum and cortex as well as with the centers of the oculomotor, vagus and accessory nerves. Hence certain types of functional or structural disturbance of any of these centers or of their nervous connections can cause vertigo.

Usually in true vertigo external objects seem to move in horizontal planes in rotary fashion. A sensation of vertical movement occurs more rarely. Attacks of true vertigo as a rule develop suddenly, are of relatively short duration and are usually accompanied by disturbed locomotion. The sensation of violent rotation may be so strong that the patient is thrown to the ground. Falling and inability to move without convulsions or without loss of consciousness may be prominent features in severe attacks of vertigo. In some of the attacks of vertigo or Ménière's syndrome, dizziness and vasomotor reactions, and rarely syncope with unconsciousness, can also be present. Frequently nausea and vomiting and usually nystagmus accompany attacks of vertigo. In milder attacks the sensation of rotation may be slight and fleeting. These features, and others, may differentiate the attack from syncope, epileptic seizures and cataplexy. In general the more acute the causative lesion, the more intense the vertigo. Thus a slowly progressing suppurative destruction of the labyrinth is usually not associated with vertigo.

Among systemic diseases, infections, arterial hypertension, severe anemia and leukemia can on rare occasions be responsible for vertigo presumably by causing local hemorrhages or other types of disturbance of the function of the labyrinth or other nervous mechanisms. Arteriosclerosis with thrombosis or rupture of the cerebral vessels can also be responsible for vertigo. Dizziness, however, more often than vertigo, is a symptom of these diseases.

While the most intense type of vertigo is a phase of classic Ménière's syndrome (recurrent attacks of severe vertigo, nausea, vomiting, tinnitus, nystagmus and deafness), vertigo as a presenting symptom is a frequent manifestation of many other organic and transient physiologic disturbances of the brain, including psychoneurosis and psychosis. The present clinical knowledge of vertigo is based mainly on investigations of structural lesions of the seventh nerve and its pathways. The earlier anatomic contributions, however, bearing on the pathogenesis of vertigo and Ménière's syndrome are often not reliable. Thus it is doubtful whether lesions within the bony canal of the eighth nerve are responsible for vertigo, for it would be unusual if such a lesion did not affect the seventh nerve; and yet a combination of vertigo and seventh nerve irritation or palsy is rare in the clinic. In addition to diseases of the labyrinth, among the organic

diseases associated with severe vertigo are concussions of the brain and lesions of the fourth ventricle (brain stem) including those caused by thrombosis of the posterior inferior cerebellar artery, encephalitis and multiple sclerosis. Syphilitic meningitis can cause vertigo if it is associated with a local meningeal reaction in the cerebellopontile angle. Pontile tumors and tumors of the cerebellopontile angle can cause tinnitus and deafness but only rarely vertigo. Cerebellar lesions do not usually cause vertigo, with the exception that tumors of the middle lobe can be associated with vertigo, presumably as a result of secondary irritation of the brain stem. For reasons which are not clear, tumors of the frontal lobe can at times give rise to vertigo.

In by far the majority of instances of severe vertigo alone or in association with tinnitus, vomiting and deafness (Ménière's syndrome), underlying structural lesions cannot be demonstrated. The attacks, which are unpredictable, are usually dominated by vertigo and related symptoms. Interparoxysmally, tinnitus and deafness are the usual features. Frequently in the early attacks vertigo alone or vertigo and tinnitus are the precursors of typical attacks of Ménière's syndrome. The differentiation between Ménière's syndrome and pseudo-Ménière's syndrome is often arbitrary. Muscular unbalance of the eyes can be responsible for vertigo, and caisson workers and aviators may complain of vertigo. Certain drugs such as the salicylates, quinine and nicotine can cause this symptom. Vertigo can be caused at times by respiratory infections such as "grip" or true influenza ("infectious labyrinthitis"), and it may represent an aura in epilepsy or be the equivalent of an epileptic seizure. Disturbance of the cerebral circulation associated with uncomplicated arterial hypertension or with sudden fluctuation of the arterial pressure is usually not responsible for vertigo or Ménière's syndrome. The appearance of attacks of vertigo in patients with arterial hypertension is usually indicative of cerebral vascular accidents.

The point, however, least appreciated by physicians is that in a small group of patients periodic attacks of vertigo or Ménière's syndrome can be the presenting manifestation of psychic disorders. These patients with vertigo of "functional" etiology are often labeled psychoneurotic. They have a nervous system inherited from their ancestors in whom in the direct or indirect line psychoses of varying degree were usually present. Not infrequently, some of the relatives have been "eccentric," "highly nervous," "worrisome" or subject to periodic "nervous breakdowns." The past emotional experiences of these patients are within the normal. Their intellectual endowment and performance are usually normal or above. Periodic interference with normal activity, however, is usually caused by functional disturbance of "vegetative" centers of the brain stem, including vertigo. Some of these functional disturbances follow strict physiologic patterns, and the severity and periodicity of the clinical picture varies considerably. These persons may have a low basal metabolic rate without myxedema. Periodic nystagmus, transient hyperactivity of the carotid sinus reflexes, excessive vasomotor fluctuations including vasospasms, disturbances of the thermal sensations and regulations, nausea, vomiting, intestinal cramp, allergic reactions and mucous colitis are present in various combinations. Associated with these disturbances are attacks of emotional anxiety (angor animi) and a sensation of bodily weakness. The symptoms of these patients, including vertigo, may have

a tendency to recurrence without progression. At times, however, these attacks long precede a psychosis. It is essential that this group of patients should not be confused with patients suffering from vertigo with secondary anxiety neurosis.

From the foregoing considerations of the underlying disturbances, it is clear that an effective schematic treatment for vertigo cannot be expected. Whenever feasible the primary cause of vertigo should be rectified. It is for this reason that elicitation of the specific cause of vertigo is the first step in its treatment. Elimination of foci of infection, including removal of teeth, tonsils and gallbladder, often advocated, are usually useless or at best of only secondary importance. Rest in bed during the attacks with avoidance of bodily motion ameliorates the intensity of vertigo. We do not possess drugs with a specific effect on vertigo. In mild cases chloretone or chloral hydrate or bromides 0.75 to 1 Gm. (10 to 15 grains) every four to six hours can be helpful. The barbiturates, especially phenobarbital, are usually but mildly effective. Of phenobarbital or pentobarbital 0.1 Gm. (1½ grains) is given three to four times daily. There are patients with vertigo or Ménière's syndrome in whom the symptoms are aggravated by barbiturates.

The treatment of vertigo associated with Ménière's syndrome requires special consideration. The very fact that a beneficial effect has been attributed to so wide a variety of therapeutic agents raises suspicion concerning their true efficacy. Epinephrine, atropine, quinine, choline derivatives, pilocarpine, histamine, dehydration, low sodium-high potassium diets, potassium chloride, nicotinic acid, thiamine, the high frequency current and diathermy are among the measures advocated. Therapeutic optimism, lack of adequate controls, irregular occurrence of the attacks and, most of all, lack of appreciation of the fact that many instances of Ménière's syndrome are transient and often of functional origin explain the short life of these various therapeutic claims. Many of the patients with vertigo or with Ménière's syndrome are quite susceptible to psychotherapeutic influences. Often minute attention to the patient and general encouragement rather than the drugs are the effective component in the management.

Among the more recent therapeutic practices the following should be mentioned: Mygind and Dederding¹ were the first to advocate that Ménière's "disease" is associated with disturbance of the salt and water metabolism and that edema of the labyrinth is responsible for the symptoms. Furstenberg, Lashmet and Lathrop² claim that retention of sodium and resultant local edema intensify or are responsible for the attack. They propose a dietary regimen free from or relatively low in sodium in which elimination of sodium is enhanced by the addition of ammonium chloride. Ammonium chloride is given in doses of 3 Gm. (6 enteric coated capsules each 0.48 Gm.) three times daily with meals, added to the diet. Talbott and Brown,³

however, were unable to demonstrate chemical changes indicative of sodium or water retention in the blood, and they concluded that gross retention of water and salt by the body is not the precipitating agent in acute attacks. These authors suspected that in the low sodium diet the relative and often absolute increase in the potassium content was the effective agent. They therefore undertook a study of the effect of a diet normal in sodium to which 6 to 10 Gm. of potassium chloride had been added daily. These investigators claim that, although such a therapeutic regimen cannot be considered as a cure for all the symptoms, nevertheless clinical improvement has been impressive. None of the 48 patients required surgical treatment. The precise action of potassium chloride in vertigo, however, remains unknown. Talbott and Brown suggest that in addition to the diuretic effect of potassium chloride, which hastens the elimination of water and sodium, a disturbance of the optimal concentration of potassium interferes with normal nerve conduction.

In the majority of cases the dietary and drug regimens outlined had to be maintained indefinitely. Both the original and the modified low sodium dietary regimens lack, however, definite rational biochemical and physiologic basis. Although several reports in the literature describe improvement or relief as a result of the low sodium or high potassium methods of treatment, this therapy failed to benefit appreciably the attacks of vertigo in a group of patients that I observed during the past seven years. Further, the specificity of the low sodium or high potassium regimen is rivaled by similar claims of benefit from several other methods of treatment.

Sheldon and Horton⁴ claim that the intravenous administration of histamine is beneficial in the attacks of Ménière's disease. About 1.9 mg. of histamine phosphate in 250 cc. of physiologic solution of sodium chloride was infused during a period of one and a half hours. This infusion was repeated on two or three successive days with some of the patients. No other medication was used simultaneously for 11 patients, and 8 others received ammonium chloride and potassium nitrate for several months. A strikingly beneficial effect is attributed to histamine in Ménière's disease by these investigators. From what is known of the bodily effects of histamine and of its short persistence of action, it is difficult to understand the rationale of this procedure. Until further confirmation of this work, no final opinion can be expressed on the therapeutic value of histamine in the treatment of this type of vertigo. Horton⁵ has stated recently that about 90 per cent of the patients treated with histamine administered intravenously experience recurrent attacks of vertigo unless there is continued treatment with histamine subcutaneously or with one of the other forms of medical procedure.

Harris and Moore⁶ claim beneficial results in the treatment of Ménière's syndrome with a diet high in vitamins and proteins. To this diet nicotinic acid and thiamine are added. Atkinson⁷ suggests, on rather

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2. Furstenberg, A. C.; Lashmet, F. H., and Lathrop, F.: Ménière's Symptom Complex: Medical Treatment, *Ann. Otol. Rhin. & Laryng.* 43: 1035-1046, 1934.

3. Talbott, J. H., and Brown, M. R.: Ménière's Syndrome Acid-Base Constituents of the Blood; Treatment with Potassium Chloride, *J. A. M. A.* 114: 125-130 (Jan. 13) 1940.

4. Sheldon, C. H., and Horton, B. T.: Treatment of Ménière's Disease with Histamine Administered Intravenously, *Proc. Staff Meet., Mayo Clin.* 15: 17-21, 1940.

5. Horton, B. T., cited by Simonton, K. M.: The Symptom of Dizziness: Its Significance in General Practice, *Proc. Staff Meet., Mayo Clin.* 16: 465-470, 1941.

6. Harris, H. E., and Moore, P. M., Sr.: The Use of Nicotinic Acid and Thiamine Chloride in the Treatment of Ménière's Syndrome, *M. Clin. North America* 24: 533-542, 1940.

7. Atkinson, Miles: Observations on the Etiology and Treatment of Ménière's Syndrome, *J. A. M. A.* 116: 1753-1760 (April 19) 1941.

meager evidence, that Ménière's syndrome is the result of vasomotor disturbance, which in one group of cases is allergic in origin and in the other is due to vasomotor spasm. According to Atkinson the allergic group can be benefited by intracutaneous and subcutaneous desensitization with histamine. In the vasoconstrictor group it is claimed that nicotinic acid and thiamine are beneficial.

Just as the medical treatment of vertigo has failed to yield clearcut results, so also have certain types of surgical therapy. For about a decade "surgical decom-

ticed it effectively, doing a partial or complete resection. Benefit from this surgical procedure has been reported by others.¹¹ Crowe¹² more recently reported the therapeutic results with a group of 94 patients operated on by Dandy. In 49 cases the auditory nerve was divided completely and in 45 cases only partially. Vertigo was relieved in the entire group, while the improvement in the tinnitus was less uniform, in some instances being worse after the operation. In the group with partial resection the hearing improved in 22 per cent, but in others it became worse. If this surgical procedure is advised, the patient should clearly understand that tinnitus will probably persist.

Destruction of the labyrinth and the ganglion of Scarpa, either through the middle ear¹³ or through the roof of the petrous bone,¹⁴ has been practiced with apparent benefit.

Walsh and Adson¹⁵ in comparing medical and surgical treatments observed improvement in three groups of patients treated respectively with low sodium diet alone, low sodium diet with ammonium chloride, and low sodium diet with potassium nitrate. They believe that section of the vestibular portion of the eighth nerve is the most effective surgical measure. Such an operation, however, should be advised only after prolonged medical treatment and only if the patient's vocation precludes attacks of vertigo, or if his economic status does not allow loss of time from labor for hospital care or prolonged medical treatment.

The present status of the treatment of vertigo in Ménière's syndrome may be summarized as follows: Patients suffering from vertigo or from Ménière's syndrome should first be managed medically. In every case a thorough search should be made for the primary underlying organic or physiologic mechanisms. These primary mechanisms should be eliminated or alleviated if possible. Fatigue, infection and physiologic and psychic stress should be avoided. Psychotherapeutic encouragement is often effective. Sedation and bed rest during the attacks are indicated. Low sodium diet or a normal diet with potassium chloride may be tried, but the value of these methods of treatment has not yet been established. If after one or preferably two years of carefully conducted medical treatment improvement does not occur, and if the attacks are severe and frequent, surgical treatment may be considered. Surgical intervention, however, is indicated in but a small, selected group.

SYNCOPE

Syncope is a syndrome dependent as a rule on a rather sudden and usually transient ischemic state of the arterial system. Syncope or related states are caused, at times, by vascular reflexes affecting certain cerebral functions. This is the case in the cerebral type

TABLE 1.—Comparative Features of Syncope and of Epileptic Seizures

	In Syncope	In Epilepsy
Predisposing factors		
Emotion.....	Frequent	Fairly frequent
Physical fatigue.....	Frequent	Fairly frequent
Irritating lesions of viscera...	Frequent	Rare
Vascular reflex.....	Frequent	Rare
Cardiovascular disturbance...	Frequent	Rare
Inherited constitution.....	Probably rare	Probably rare
Upright position.....	Frequent	Frequent
Horizontal position.....	Rare	Frequent
Sleep.....	Rare	Frequent
Age.....	Any	Any
Manifestations of attacks		
Aura (visual, auditory, sensory)	Frequent	Frequent
Duration of aura.....	Very short	Relatively prolonged
Angor animi.....	Frequent	Frequent
Olfactory aura.....	Absent	Fairly rare
Sudden onset.....	Relatively frequent	Frequent
Groaning.....	Usually absent	Frequent
Loss of response with maintained motor function	Rare	In petit mal, common
Color of face.....	Pale	At first pale, then flushed
Convulsions.....	If present, mild; preceded by collapse	Often initial and severe
Localized convulsions.....	Usually absent	Frequent
Biting of tongue.....	Rare	Common
Perspiration.....	Frequent, cold	Frequent, warm
Heart rate.....	Slow, normal or rapid	Normal or rapid
Blood pressure.....	Usually low; at times normal	Normal or elevated
Weak or absent pulse.....	Common	Rare
Respiration.....	Quiet, shallow or slow	Stertorous and labored
Vomiting.....	Frequent	Frequent
Micturition.....	Fairly frequent	Frequent
Defecation.....	Rare	Frequent
Duration of attacks.....	Short (seconds or minutes)	Longer
Postseizure confusion.....	Rare	Frequent
Postseizure headache.....	Frequent, mild	Frequent, severe
Amnesia after attack.....	Frequent	Frequent
Postseizure fever.....	Absent	Frequent, severe

pression" of the labyrinth has been practiced, particularly by the British surgeons. This practice has been based mainly on the suggestions of Cheatle,⁸ who claimed that Ménière's syndrome depended on increased pressure in the labyrinth. Notwithstanding the claims for their effectiveness, these procedures are no longer practiced. At present intracranial division of the auditory nerves is performed in the treatment of severe recurrent vertigo of Ménière's syndrome. Although Charcot as early as 1874 suggested this operation and Frazier⁹ performed it in 1912, it was Dandy¹⁰ who first prac-

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16. Putnam, T. J.: Treatment of Recurrent Vertigo (Ménière's Syndrome) by Subtemporal Destruction of the Labyrinth, Arch. Otolaryngol. 27: 161-168, 1938.
17. Walsh, M. N., and Adson, A. W.: Ménière's Syndrome: Medical versus Surgical Treatment, J. A. M. A. 114: 130-136 (Jan. 13) 1941.

of carotid sinus syncope. Syncope is one type of the shock syndrome.¹⁶ The clinical manifestations of syncope are primarily those of acute cerebral ischemia and anoxia (anoxic syndrome). In the classic instance of syncope there is unconsciousness, at times associated with mild clonic convulsions. In elderly persons convulsions may be a prominent feature in an attack of syncope. If, however, the ischemic state of the central nervous system is mild, light headedness, weakness, dizziness, scintillating scotomas, dimness of vision, "black out," unsteadiness or nausea and vomiting may be the *forme fruste* manifestations. These symptoms may be absent if the underlying physiologic mechanism is set in action with great rapidity. A sensation of rotation, characteristic of vertigo, is usually absent in syncope.

Some persons experience auras that are similar to those occurring before the onset of epileptic fits. As a rule the duration of syncope or syncopal equivalents is less than that of vertigo. In vertigo the duration of the attack is usually measured in hours; in syncope it is measured in minutes. Syncope is dependent primarily on a disturbance of the circulation; vertigo, as already indicated, depends on the disturbance of specific nerve structures and functions.

In most types of syncope the derangement of the circulating blood volume takes place within the cardiovascular system. In a small group of patients, however, hemorrhage is responsible for syncope. Usually either the heart suddenly fails to take care of the inflow of blood (cardiac syncope or acute cardiac shock) or the venous blood flow is rapidly diminished as a result of active or passive dilatation of portions of the vascular bed (vascular syncope). In the shunting or pooling of blood the venous system frequently plays an important role.¹⁷ Among the common causes of syncope are (a) nervous conditions (psychogenic factors, pain or other reflexes, structural lesions of the central nervous system), (b) gravity, (c) chemical factors including anoxia, (d) hemorrhage.¹⁸ Although recovery from syncope is the usual course, syncope can be fatal. Because of the importance of gravity in the pooling of blood within the vascular system, to allow the body to remain in an upright or a sitting position during syncope is particularly dangerous. All types of syncope are more prone to occur in the upright, immobile position, and syncopes developing when the body is in a horizontal position are usually of graver significance. For example, in patients with bleeding peptic ulcer, syncope which develops while the patient is resting in bed is indicative of serious internal hemorrhage. In the presence of increased irritability of the cardiac reflexes and of the myocardium such as develops in association with coronary sclerosis, thrombosis or aortic stenosis, and after certain infections such as influenza, streptococcal infections or rheumatic fever; fatal syncope due to asystole or to cardiac irregularities such as ventricular fibrillation or to vagal inhibition with asystole is prone to occur.¹⁹ Whenever death occurs

unexpectedly and truly instantaneously, the most probable cause for it is syncope and not acute organic diseases such as cerebrovascular accidents or pulmonary embolism. The onset of pulmonary embolism or fresh coronary infarction can at times be associated with instantaneous death, but it is probable that in these cases the superimposed reflex inhibition of the heart is the immediate cause of death. In the presence of severe organic diseases of the cardiovascular system the same type of syncope is, as a rule, of graver prognostic significance than in normal persons. Whereas in normal persons, owing to the presence of numerous emergency functions and the reserve capacity of the vital organs, a return to normal equilibrium is accomplished with relative ease and promptness; in diseased or aged persons, because organs are damaged and homeostatic capacity limited, a return to the normal level becomes more difficult, is slower and may not occur.

There is an intimate relationship between the fundamental underlying physiologic mechanisms of syncope,

TABLE 2—Types of Syncope in Morbid States

Condition	Type of Syncope
Neurosis, nervous strain	Vasovagal
Mountain sickness.	Vasovagal
Infectious diseases	Vasovagal, vagovagal
Menstruation	Vasovagal, carotid sinus
Nutritional deficiencies	Vasovagal, carotid sinus
Organic brain disease (syphilis of the nervous system)	Vasovagal, postural hypotension, carotid sinus, vagovagal
Aortic stenosis, mitral stenosis	Mechanical ischemia, vagal asystole (?)
Coronary sclerosis, coronary thrombosis, myocarditis	Vagal asystole, carotid sinus, Adams Stokes
Hemorrhage	Vasovagal
Chronic anemia.	Vasovagal
Acute visceral lesions	Vasovagal, vagovagal
Neoplasm of neck and mediastinum	Carotid sinus, vagovagal
Hyperinsulinism	Vasovagal
Digitalis.	Carotid sinus
General anesthesia	Carotid sinus, vagovagal
Local anesthesia	Central type

collapse and shock. This close relationship is indicated not only by the similarity of the fundamental mechanisms but also by the fact that the same noxious influence, depending on its intensity and duration, can produce syncope, collapse or shock. Thus gastric hemorrhage can be responsible for any of these three syndromes. For the most part the intensity of the stimulus, the time element, the ease of reversibility and the secondary changes in the vessels and tissues are the chief differential features between syncope, collapse and shock.²⁰ Syncope should be carefully differentiated from attacks of epilepsy, Ménière's syndrome and cataplexy. The differential characteristics of syncope, vertigo and Ménière's syndrome have already been described. The important criteria for the sometimes difficult differential diagnosis to be made between faints (syncopes) and fits (epileptic attacks) are summarized in table 1.

A classification of the various types of syncope and the details of differentiation have been discussed elsewhere.²⁰

In addition to these general considerations, a knowledge of the physiologic mechanisms underlying the

16 Weiss, Soma. Syncope, Collapse and Shock, Proc Inst Med. Chicago 13, number 1, 1940

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19 Weiss, Soma. Instantaneous "Physiologic" Death, New England J Med 223: 793 797, 1940

20 Weiss, Soma. The Interpretation and Treatment of Spells of Unconsciousness in Medical and Surgical Practice, Proc Inter State Post Graduate Medical Assembly of North America, 1940, p 66, Syncope and Related Syndromes

various types of syncope is essential in the treatment. Table 2 lists the more common types of conditions associated with syncope and the specific types of syncope usually associated with the conditions.

Different types of syncope may require diametrically opposite treatment. Certain general therapeutic principles, however, should always be remembered. In general in most types of syncope, particularly the vasovagal type, in which often psychogenic factors and the upright position play important roles, the attack will usually cease after the body is brought into the horizontal position and the lower extremities are elevated. Persons with a tendency to vasovagal syncope, when standing motionless, should be instructed to maintain rhythmic isometric muscular contractions. Although in the majority of instances of vasovagal syncope vagocardiac inhibitions play some role, experimental evidence indicates that parenteral administration of atropine in doses of 2 to 6 mg.—a dose large enough to depress the vagal influence—does not usually prevent the attacks. Vasovagal syncope can occur, particularly in the upright position, after the administration of vasodilator drugs, such as the nitrites and choline derivatives. To prevent these attacks it is essential to keep the patient in the horizontal position after the administration of the drug. Persons with severe aerophagia can suffer from vasovagal or vagovagal types of syncope caused by the combination of the distention of cardia and esophagus and the psychic factors present. Reeducation of these patients may cure the attacks.

Syncope is prone to occur in the course of infectious diseases if the upright position is assumed. This type of syncope is usually vasovagal in character, and increased distensibility of the minute vessels plays a role. Heightened sensitivity of the heart to vagal inhibition can also be a factor. It is of interest that often the tendency to syncope is greater with a mild upper respiratory infection than after prolonged bed rest of weeks' or months' duration.²¹ This is of practical importance particularly in aviation medicine. Aviators should not be allowed to fly at a high altitude when suffering from even a mild respiratory infection.

In attacks of syncope in which vagal inhibition is the primary factor (the cardiac type of carotid sinus syncope and the vagovagal type) doses of atropine (1 to 3 mg.) or tincture of belladonna (1 to 3 cc.) may prevent the occurrence of the attacks. At times, however, toxic side reactions to these drugs interfere with the therapeutic efficacy of these drugs. Epinephrine in hypodermic doses of 0.5 to 1 mg. is effective in the relief or prevention of the vasovagal, the vagovagal, the cardiac or the vascular types of carotid sinus syncope and Adams-Stokes attacks caused by complete dissociation of auricles and ventricles. Digitalis at times enhances the tendency to syncope in patients with heart disease. In some patients with normal sinus rhythm with tendency to Adams-Stokes attacks, ephedrine in oral doses of 30 to 40 mg. every four to six hours may prevent attacks. It has been shown that the efficacy of ephedrine in these patients does not necessarily lie in its ability to prevent the occurrence of the block but rather in its tendency to induce increased irritability of the myocardium. As a result of this hyperirritability when the block occurs an effective idioventricular

rhythm develops instantaneously.²² Barium chloride has been found in my experience to be ineffective in the prevention of Adams-Stokes attacks due to heart block.

Syncope or equivalent manifestations caused by paroxysmal tachycardias are treated according to the underlying intracardiac disturbances. In the treatment of dizziness or syncope caused by paroxysmal auricular tachycardia the effective measures are usually those which induce prolonged vagal stimulation.²³ Among the simplest of these are pressure on the carotid sinus or on the eyeballs, bending with the head down, rapid swallowing, holding the breath, distention of the stomach with gas liberated from the ingestion of compound effervescent powders, self-induced vomiting, and stretching of the rectal sphincters. Administration of 10 to 20 mg. of morphine or 3 to 5 mg. of apomorphine can be effective. Digitalization, using up to 1 or 1.5 Gm. total dose of the U. S. P. powder, may be indicated. In my experience syrup of ipecac in doses of 4 to 12 cc. is often effective even in obstinate cases. In the prevention of the attack quinine or quinidine in the usual therapeutic doses (0.2 to 0.4 Gm. every four hours) may be effective. Auricular flutter is only rarely responsible for syncope. In these rare instances effective doses of digitalis should be administered. If, following the appearance of auricular fibrillation, spontaneous sinus rhythm does not develop, administration of quinidine in doses of 0.2 to 0.4 Gm. every four hours is indicated. Ventricular tachycardia can be responsible for syncope or equivalent cerebral symptoms, and administration of quinidine or quinine is the measure of choice. In severe or resistant cases intravenous therapy is justified, although the method of treatment is not without danger. Doses of 0.3 to 0.5 Gm. should be administered in 20 cc. solution slowly in the course of fifteen to twenty minutes. Cough, asthma, cyanosis or accentuation of symptoms is an indication for interruption or discontinuation of this therapy. I have seen attacks of ventricular tachycardia lasting for days, which were resistant to various types of treatment until a dose of quinidine sulfate as high as 1 Gm. was given intravenously. In some instances of ventricular tachycardia magnesium sulfate administered intravenously is apparently effective. In a case observed recently, an attack lasted two to three hours and ceased within five minutes after the slow intravenous administration of 3 Gm. of magnesium sulfate in a 50 per cent solution. For the prevention of ventricular tachycardia and ventricular fibrillation caused by coronary thrombosis, routine quinidine therapy has been advocated. It is difficult to evaluate the efficacy of this treatment.

Syncope associated with pleural or pericardial shock often can be prevented by performing surgical manipulation (taps) in the horizontal rather than in the sitting position, by using local anesthesia and by administering atropine before the manipulations. Inflamed surfaces of the pleura are particularly prone to increase the pleural reflexes.

The treatment of syncope caused by orthostatic hypotension is not very satisfactory. It has been shown recently that often this is a manifestation of disease

22. Weiss, Soma, and Ferris, E. B., Jr.: Adams-Stokes Syndrome with Transient Complete Heart Block of Vagovagal Reflex Origin: Mechanism and Treatment, *Arch. Int. Med.* 54:911 (Dec.) 1934.
23. Weiss, Soma, and Sprague, H. B.: Vagal Reflex Irritability and the Treatment of Paroxysmal Auricular Tachycardia with Ipecac, *Am. J. Sc.* 1941:53, 1937.

of the sympathetic nervous system in which hydrostatic pressure plays an important role.²⁴ In patients with syphilitic diseases of the nervous system, particularly dementia paralytica and tabes, syncope is caused by orthostatic hypotension. Some of these patients have an increased tendency to syncope and collapse during fever therapy. The morning dizziness or syncope of the aged may be caused by a tendency to orthostatic hypotension at that time of day. This and other types of orthostatic hypotension may improve as the day goes on. In the less severe cases, such as occur in the aged, mild morning exercise and a cup of tea in bed one half to one hour before getting up may be effective. Ephedrine sulfate in doses of 25 to 50 mg. or paredrinol (*a*-N-dimethyl-p-hydroxyphenethylamine) and presumably paredrine in doses of 10 to 20 mg. intramuscularly are also helpful. In addition to these measures, bandaging of the extremities and abdominal binders may help.

The treatment of syncope associated with toxic reactions caused by local anesthetics consists of treatment of the poisoning caused by the drug. In the prevention of these toxic reactions administration of barbiturates in doses of 0.2 Gm. of phenobarbital, pentobarbital or amytal is effective. Syncope associated with hemorrhage or severe anemia should be treated specifically with transfusions of blood or proper blood substitutes (plasma or albumin solutions), or with specific measures for the treatment of chronic anemias (iron and liver extracts). Hypoglycemic reactions can be responsible at times for syncope. In these cases administration of dextrose, avoidance of overdoses of insulin or surgical removal of the adenoma of the islands of Langerhans or of other neoplasms of the glands of internal secretion are the effective therapeutic measures. There are patients suffering from angina pectoris who, with some or all of their attacks of angina, develop syncope (syncope anginosa) or milder manifestation. The drugs effective in the prevention of angina will also prevent the fainting or cerebral ischemia. If the patient is receiving digitalis, this should be discontinued. Rarely patients with advanced ("fishmouth") mitral stenosis or congenital heart disease suffer from syncope or milder equivalent symptoms on exertion. As this type of syncope depends on inadequate cardiac output caused by mechanical impediment, avoidance of physical stress is the only preventive measure available. The syncope associated with aortic stenosis is usually associated with bradycardia, but the exact nature of this type of syncope is not known at present. In instances of carotid sinus syncope, particularly in the cerebral type, which do not yield to simple measures which prevent mechanical stimulation of the sinus or to specific medication, surgical denervation of the sinus is indicated.²⁵ Rarely surgical removal of irritating structures which are responsible for reflex syncope may cure the patient.²²

Thus it will be seen that the treatment of syncope depends on the underlying etiology and physiologic mechanism. In each case effective therapy can be undertaken only after the pathogenic factors have been elicited.

721 Huntington Avenue.

24. Ellis, L. B., and Haynes, Florence W.: Postural Hypotension with Particular Reference to Its Occurrence in Disease of the Central Nervous System, *Arch. Int. Med.* 58: 773-798 (Nov.) 1936. Stead, E. A., Jr., and Elbert, R. V.: Postural Hypotension, a Disease of the Sympathetic Nervous System, *ibid.* 67: 546-562 (March) 1941.

25. Weiss, Soma, and Baker, J. F.: The Carotid Sinus Reflex in Health and Disease: Its Role in the Causation of Fainting and Convulsions, *Medicine* 12: 297, 1933. Ferris, E. B., Jr.; Capps, R. B., and Weiss, Soma: Carotid Sinus Syncope and Its Bearing on the Mechanism of the Unconscious State and Convulsions, *Medicine* 14: 377, 1935.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
HOWARD A. CARTER, Secretary.

SIMPLE WORKABLE RESPIRATOR

An epidemic of poliomyelitis of major proportions struck the Northern peninsula of Michigan in the fall of 1940. Within a period of a few days 90 patients were rushed by train, by automobile and even by airplane into St. Luke's Hospital at Marquette, Mich. The respiratory type of paralysis was unusually prevalent among the affected children. Only one respirator was available, and at least 12 children needed assistance.

The superintendent of St. Luke's Hospital appealed to Mr. M. K. Reynolds, one of the trustees, for help, insisting that with his engineering ability he surely could devise some type of temporary respirators that could meet the problem until regular respirators could be obtained. The machine shop which Mr. Reynolds maintained at his private boat yard immediately was turned into a respirator laboratory. Cabinet makers and machinists were called in and within a few hours crude but workable respirators were delivered to the hospital. Their first homemade respirator consisted of two gasoline drums welded together and fitted with a hand manipulated valve; this apparatus was attached by a hose to the one available large respirator as a "trailer." Two children were placed in this "trailer," and women of the community worked the valve by hand constantly for thirty-six hours, or until a mechanical automatic valve was constructed. The thrilling story of this volunteer community effort to meet the respiratory problem when commercial respirators were not available was published in the December 1940 issue of *Hygieia*.

Since that article was published, Mr. Reynolds has received numerous letters and many personal visits from representatives of remote communities where poliomyelitis has broken out and where the respiratory problem has become as acute as it was in Marquette. For example, an epidemic has been raging in Alaska. Respirators were needed. An appeal came to Mr. Reynolds and he sent photographs and working plans for making this simple wooden respirator which had proved so valuable in the Marquette epidemic. In his opinion these respirators could be made within a few hours in any school manual training shop, should the emergency arise.

That there is a great need for emergency respirators was recognized by Drs. Phillip Drinker and Edgar Roy, who published specifications for making such an apparatus in the *Journal of Pediatrics* (13:71 [July] 1938). This need is also evident from the urgent requests which have come to the office of the Council during the past year from various parts of the country asking for information as to the location of available respirators. The National Foundation for Infantile Paralysis on July 1, 1941 published a complete list of respirators, giving locations and owners, which may be obtained from the foundation at 120 Broadway, New York City.

It has long been recognized that the need for respirators arises in time of great emergency and that commercial respirators are not always available when needed. Furthermore, a simple respirator such as this should prove useful for intermittent home use to a limited number of badly paralyzed patients who have been hospitalized for many months. Since the respirator can be built cheaply, it can meet an economic problem heretofore almost unsurmountable for patients who require prolonged assistance of a respirator.

Mr. M. K. Reynolds has given to the Council on Physical Therapy a complete set of drawings with instructions for building this simple workable respirator. A pamphlet which graphically sets forth its construction has been prepared and is available for distribution on application to the Council on Physical Therapy of the American Medical Association. This pamphlet should enable any community far removed from a supply of commercial respirators to build this life saving device.

The Council on Physical Therapy has reviewed the plans for making this simple wooden respirator and has authorized the publication of this pamphlet. We feel that Mr. Reynold's gift to humanity merits the gratitude of the entire profession.

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SATURDAY, FEBRUARY 14, 1942

DOCTORS' DOLLARS FOR BONDS

Since "Jap Sunday" this nation has been resolute for total victory. In this war physicians will play multiple roles. Through the Procurement and Assignment Service every physician will have opportunity to contribute services to the armed forces or to the care of civilians. Most physicians who serve the armed forces do so at a considerable financial sacrifice. Physicians who remain at home may also contribute by lending money to the government to pay for the tools of war.

To the largest possible extent it is the announced policy of our government today to pay as we go. This means that each year as much as possible of the annual cost of the war effort will be paid out of taxes. The President has asked that funds from the various taxes be increased during the next year by \$9,000,000,000. But the tax total will not be sufficient to meet the cost of the war effort. To obtain the money to push the war effort to the maximum, the Treasury has asked every earner to lend dollars to the government through the defense savings program. The purchase of a bond makes the buyer an active helper in the country's effort. Moreover, money put into defense bonds helps to curb inflation.

As an accepted leader in the community the physician may do much to aid the sale of defense bonds. Each person who buys a bond or a stamp regularly builds himself a personal financial reserve just as good as cash in the bank. Such reserves will help take care of any emergency need, in health or in illness, and will serve as security for the distant future. This is the American way; the individual assumes in large measure responsibility for himself.

There are three series of defense savings bonds, known as E, F and G. Each is designed to meet a different sort of buyer, with a different kind of need.

Series E bonds are the "people's bonds." They may be bought only by individuals in their own rights and are cut to fit all sizes of pocketbooks with a limit on holdings of \$5,000 maturity value of bonds issued in one calendar year. The people's bonds are appreciation bonds which cost 75 per cent of their face value, and the government pays back the full amount at the end of ten years. The $33\frac{1}{3}$ per cent increase is equivalent to an annual return of 2.9 per cent compounded semiannually. They may be registered in the names of one or two persons or in the name of one person with a second listed as beneficiary. To protect the buyer of a bond, it is made so that he cannot sell it or use it as security for a loan, but he may redeem it any time after sixty days from the date of issue. The smallest of the people's bonds costs \$18.75. But this is not the smallest amount that can be put into defense savings. Smaller amounts of money purchase savings stamps, which can be bought for as little as 10 cents. Money invested in stamps does not bring interest, but \$18.75 in stamps can be turned in for one of the registered interest bearing bonds. Nearly every post office in the nation has a bond and stamp window. Nearly every national and state bank in the United States has bonds for sale. Tens of thousands of retail stores have stamps.

The F and G bonds are largely for associations, corporations and other large investors. Formerly the smallest series F bond cost \$74, but the demand from organizations for a smaller denomination bond has been so great that now the Treasury is offering a \$25 series F bond which costs \$18.75. The bonds of series F are purchased for 74 per cent of their face value and at the end of the twelve year maturity period provide a return equivalent to an annual interest rate of 2.53 per cent compounded semiannually. F and G bonds are redeemable by the owner on one month's notice after six months of the issue date of the bond. The owner is limited to \$50,000 (cost price) of series F bonds alone or in combination with series G bonds originally issued to such owner in any one calendar year.

Series G bonds are intended for those who wish to receive a current income from their investment. Their cost is the same as their face value, and they are issued in denominations from \$100 to \$10,000. These bonds mature twelve years from the date of issue, and interest is payable semiannually at the rate of 2.5 per cent if carried through to maturity.

Although bonds of series F and G are issued only by Federal Reserve banks and the Treasury Department, commercial banks generally will handle applications for them.

The physicians of America have never refused responsibilities placed on them in time of war. They are responding now to every demand. They may be counted on to do their full share in the defense savings program.

HOW TO RELAX

"If we could learn how to balance rest against effort, calmness against strain, quiet against turmoil," says Dr. Josephine Rathbone, "we would assure ourselves of joy in living and psychophysical health for life." The psychologists believe that people who live dynamically without being too tense have four main attributes: first, rhythm, in their activities with great swings in output and accomplishment, alternating with periods of repose; second, a sense of values which makes it possible to minimize effort and minimize strain; third, ability to reduce muscular tension in any part of the body consciously whenever desired, and, fourth, a readiness to fall asleep at will.

While these attributes may develop spontaneously to some extent in some persons, it is also possible to cultivate them in a measure. In order to aid such cultivation, ten tricks are presented which are believed to be useful in realizing relaxation. They are:

1. Cut down on the intensity of your thinking half an hour before retiring. (Play Chinese checkers, plan an excursion for the week end, write a letter to a friend, fill with pleasant things you have been doing.)

2. Take plenty of time to get ready for bed (next morning's clothes, leisurely bath, and so on).

3. If you like to read in bed choose nonfiction or a "hard" book. Force your mind to grapple with cumbersome facts, bore it into unconditional surrender to sleep.

4. Transplant your mind from fears or hates to a field which has interest without excitement (a new wardrobe, possibly).

5. Make your mind hop from one idea to another. Just as the mind loses consciousness and sleep comes, thoughts become disjointed and scattered. (Start with some happy episode in childhood, for example.)

6. To quiet the body, get rid of any pressure or pain. (Lighten weight of covers, clothes.)

7. Tepid bath without a rubdown. (Get into bed a little damp and chilly. As the body becomes warmed it becomes more and more comfortable. If during the night one becomes sleepless, throw back covers until body becomes uncomfortably chilly. Then when the covers are pulled up again, the body once more sinks into coziness.)

8. Imitate the slow, deep rhythmical breathing of sleep. (Helps regulate the circulation and may ease the mind and emotions; also tensions in the abdomen.)

9. Relax the muscles completely.

10. Get rested before trying to sleep. (Get into bed an hour or more before your regular time for retiring. Do so night after night to build up a reserve of rest and fall asleep without the old struggle.)

The balance between what can be accomplished by education and practice and what is innate in producing

relaxation and longevity is a delicate one. Physicians have long known that people with a low blood pressure, a low basal metabolic rate, a low pulse rate and a low intake of food—if all of these are not too low—tend to live longer than those in whom these physical factors are at extremely high levels. Perhaps equally important is a low threshold for the sense of humor—a mental attitude which does not take life too seriously.

NEW AIDS IN THE DIAGNOSIS OF LYMPHOGRANULOMA VENEREUM

The possibility of widespread latent infection with lymphogranuloma venereum in this and other countries has been recognized since the Frei test came into more general use. Many persons under observation for other venereal diseases repeatedly have been found with a positive test for this disease. Frei¹ refers to nine papers published before 1936, all mentioning the existence of latent lymphogranuloma venereum in normal persons and in prostitutes. In all those studied the latent infection was indicated by positive Frei tests. Singularly, in many of the so-called normal persons with a positive test a record of infection with lymphogranuloma venereum was lacking. Clinical evidence also is available indicating that other obscure conditions, particularly of the lower bowel, may be related to lymphogranuloma venereum; this fact is emphasized by the paper of Palmer, Kirsner and Rodaniche in this issue of *THE JOURNAL*, page 517.

During the past year the Squibb Institute for Medical Research, collaborating with workers² from Long Island College of Medicine, has developed methods which offer promise for a more refined study of lymphogranuloma venereum. The Frei antigen, as first described, consisted of sterile pus from an unruptured bubo in a person without history or evidence of other venereal disease. The original antigen has disadvantages. There were few cases free from evidence of other venereal diseases which have buboes without secondary bacterial infection; even then the amount of pus in such buboes is small and its potency varies with the individual. Numerous unsuccessful studies have been made to discover other sources of Frei antigen. These investigators and their associates have demonstrated that the virus of lymphogranuloma venereum can be propagated in large amounts when inoculated into the yolk sac of the developing chick embryo. The virus thus propagated can be separated readily from much of the yolk and tissue components by differ-

1. Frei, Wilhelm: On the Skin Test in Lymphogranuloma Inguinale: A Brief Review and a Discussion of Some Possible Causes of Error, *J. Invest. Dermat.* 1: 367 (Oct.) 1938.

2. Rake, Geoffrey, and others: New Aids in the Diagnosis of Lymphogranuloma Venereum, *Am. J. Syph., Gonorr. & Ven. Dis.* 25: 687 (Nov.) 1941.

ential centrifugation. This discovery has not only made possible the production of a large amount of the virus of lymphogranuloma venereum for experimental and clinical use but has led to the hope that an antigen could be produced for a successful complement fixation test for diagnostic use.

The new yolk sac antigen is prepared by liberation of the virus from the cells of the yolk sacs by grinding with abrasion, and suspending the material in saline solution; by separation of the virus from the yolk sac constituents by differential centrifugation and dilution of the final virus-containing sediment in saline solution to a volume two hundred or more times that of the original yolk sacs, and then by inactivating the virus by addition of solution of formaldehyde and phenol to final concentrations of 0.1 per cent and 0.25 per cent, respectively; sterility tests are then made in suitable culture mediums and in the yolk sacs of normal eggs. This antigen has been used successfully in the intradermal Frei test carried out in the usual way with 0.1 cc. of the antigen and read forty-eight or seventy-two hours after inoculation. These observers found that the antigen can be employed satisfactorily in the Frei intradermal test, that it was more sensitive than mouse brain antigen and that it has little power to sensitize patients to the antigen or to egg products. Most of the many investigators who have tried to develop a complement fixation test for lymphogranuloma venereum have failed to demonstrate a specific reaction. The present investigators and their collaborators,² using the yolk sac antigen, have successfully demonstrated complement fixing properties in the serum of infected patients. The complement fixation test as used by them was notable for simplicity and rapidity of performance. Although overnight fixation in the refrigerator results in slightly higher titers for "positive" serums, this time consuming refinement is not necessary. A specimen of serum submitted for the Wassermann test can be employed equally well in the test for lymphogranuloma venereum. There is no necessity for the patient to return a second time as is the case in the reading of the Frei test. Extensive observations made during this study in a case of accidental laboratory infection suggest that complement fixing properties may appear in the serum within a week after the onset of symptoms. In this case the Frei test became negative after chemotherapy, while the serum still showed specific complement fixation. In fact all the indications obtained by these workers were to the effect that the test is more delicate than the Frei test in detecting borderline cases. The test may prove useful in epidemiologic surveys to determine the incidence of lymphogranuloma venereum among the general population.

Current Comment

DOCTORS FOR BRITAIN

With the entrance of the United States into World War II, our project to aid Great Britain by supplying medical volunteers for the British emergency medical service and also for the British army came to an end. It is understood that American physicians in Britain will be given the opportunity to join the American forces. Among the physicians sent to Britain were twelve women who, it is understood, will continue their work in Great Britain. The total number of physicians sent to Great Britain in this project was well under one hundred. The American Red Cross and the British Red Cross have expressed appreciation of the efforts of the medical profession to aid them in securing such medical personnel as they were able to secure in this way.

EMERGENCY RESPIRATOR

When an epidemic of poliomyelitis strikes suddenly, medical and hospital facilities are sometimes inadequate to cope with the situation. Especially is this true when extra respirators are urgently needed. Hospital authorities who wish to serve their communities efficiently are nevertheless confronted with the perplexing decision as to whether or not an investment supplies facilities whose use justifies their cost. Some hospitals cannot afford to purchase a commercial respirator; other institutions may have one or possibly two respirators lying idle in the store room most of the time. Often during epidemics ten times the available local supply of respirators may be demanded. The National Foundation for Infantile Paralysis has published a list of respirators giving the location of owners; the headquarters of the foundation is glad to assist in supplying respirators for emergencies. Even with this assistance, the urgent need for respirators may not be satisfied. One community in the northern peninsula of Michigan solved the problem by constructing home made respirators from material commonly found in a carpentry or machine shop. Elsewhere in this issue of THE JOURNAL, in a report of the Council on Physical Therapy, additional information on emergency respirators is given. To conserve space, detailed specifications for construction are not published in THE JOURNAL, but they may be obtained for 10 cents by writing to the office of the Council on Physical Therapy at the American Medical Association in Chicago and requesting the pamphlet entitled "Simple Workable Respirators." Hospital authorities finding their budgets strained to the limit will welcome this information. Other institutions already equipped with respirators may wish to have the specifications in their files in case of emergency. These plans may be turned over to the maintenance department or the house carpenter for study, so that the person in charge will be familiar with them should an emergency arise. These home made respirators are not designed to take the place of efficient commercial acceptable respirators on the market but are offered as a means of tiding over an institution until more permanent equipment is made available.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

AN OPEN LETTER TO THE MEDICAL PROFESSION

The Office of the Procurement and Assignment Service has been flooded with thousands of enrolment forms and letters of inquiry. Present conditions make it impossible to acknowledge the receipt of enrolment forms or to answer the questions individually.

The office has been moved to 601 Pennsylvania Avenue N.W., Washington, D. C. Sufficient clerical assistants are difficult to obtain at this time.

All letters have been given personal attention and the questions have been clarified. The Committee on Information is preparing an article which should answer most questions. This will be ready for release in the very near future (probably February 21.—Ed.). This committee is also preparing a complete pamphlet of information on the organization, functions and activities of the Procurement and Assignment Service.

Many thousand enrolment forms have been processed; those who have volunteered for immediate service in the Army or the Navy will receive application blanks to be completed with a view of commission at an early date. The major portion of the time of this office is required for this purpose.

I would like to ask that all inquirers be patient with the thought that they will receive the answers to their questions and that the continued releases from this office will serve to keep them up to date. This should reduce materially the amount of correspondence. In this way the office will be relieved to the extent that it can provide personnel for the armed forces to meet the immediately expanding needs.

Questionnaires have been drawn up and enrolment forms are now being printed. These will be mailed to every physician, dentist and veterinarian within the near future. All information at hand as a result of previous questionnaires is being utilized. The additional data and the enrolment will serve to meet the future needs of the armed services and the governmental, industrial and civilian agencies which will require assistance.

I wish to express the appreciation of the Directing Board for the cooperation of the physicians, dentists and veterinarians which has made it possible for us to meet the military needs in such a short period of time.

MAJOR SAM F. SEELEY, M. C., U. S. Army.
Executive Officer, Procurement and
Assignment Service.

CHICAGO ORGANIZES EMERGENCY MEDICAL SERVICE

The Emergency Medical Service of the Office of Civilian Defense for the Chicago Metropolitan Area has completed its organization and now is functioning. Mayor Edward J. Kelly of Chicago, Metropolitan Coordinator, has announced. Dr. Herman N. Bundesen is chief of Emergency Medical Service and chairman of the Executive Committee of the Medical Advisory Council. Dr. Morris Fishbein is vice chairman of the Executive Committee. Other members are Dr. Raymond B. Allen, Dr. John S. Coulter, Mr. Joseph H. King and Dr. Malcolm T. MacEachern.

The chairmen of the various divisions of the Medical Advisory Council are as follows: Mr. King, Ambulance and Emergency Transportation; Dr. Sidney O. Levinson, Blood Transfusion and Blood Banks; Mr. O. U. Sisson, Drugs, Supplies and Equipment; Dr. Loyal Davis, First Aid Posts and Casualty Stations; Dr. MacEachern, Hospitals and Clinics; Dr. Harry E. Mock Sr., Health of Industrial Workers; Dr. Irving S. Cutter, Information; Miss Ada R. Crocker, R.N., Nurses' Aides; Mrs. Anna M. Fishbein, Nursing Care, Health of Women and Nutrition; Dr. H. Prather Saunders, Physicians; Dr. Walter H. Theobald, Shelters, Public Health and Morale, and Dr. James P. Simonds, Water Supplies.

As an example of the extent of the medical protection already created for the Chicago Metropolitan Area, the announcement says, in the event of an emergency ten thousand people from any one of the twenty-two zones established in the Metropolitan Area can be moved to a hospital within sixty minutes. An inventory of hospital facilities, equipment and personnel has

been completed and emergency medical field units have been established in practically all of the approved hospitals. First aid posts have been designated and the training of nurses' aides, under way for some time, is being constantly expanded. An inventory of supplies and necessary drugs in the Metropolitan Area is rapidly nearing completion, and four thousand drug stores in the area are available for supplying information to the public on the location of the nearest air raid shelters and medical facilities in the event of an emergency.

Steps have been taken for the safeguarding of the water supply in the area, both civilian and industrial, against contamination. These precautions involve not only the guarding of the sources of water supply but also such vital moves as the insuring of an adequate reserve supply of chlorine for the purifying of the water.

A survey is rapidly nearing completion of the day nurseries in the Metropolitan Area so that the Medical Advisory Council will be able adequately to take care of the children of employed mothers while they are at work.

A roster of physicians to man all the various medical operations of the Emergency Medical Service has been completed.

A miniature model casualty station to show the public how this phase of Emergency Medical Service will function, in the event of an emergency, is being made by Mrs. James Ward Thorne, noted miniaturist, and will be placed in the Museum of Science and Industry. The announcement says this will be the first model of its kind in the country.

It was announced that the following statement has been made by Dr. George Baehr, Chief Medical Officer of Civilian Defense, Washington, D. C.: "The recommendation of the United States Office of Civilian Defense has been adapted to the needs of

Metropolitan Chicago in so comprehensive a manner that the plans of the Medical Advisory Council of Chicago Metropolitan Civilian Defense Area may be accepted as a pattern for other large cities in the Middle West."

GENERAL HOSPITALS ORDERED INTO SERVICE

Present indications point to the activation of a number of reserve affiliated hospital units in the near future. The War Department has already ordered the activation of the Fourth, Fifth and Twenty-First Reserve General Hospitals and has ordered the Fifty-Second Evacuation Hospital to active duty. The Fourth General Hospital was organized by Western Reserve University Medical School, Cleveland, and has been ordered to active duty; the Fifth General Hospital by Harvard Medical School; the Twenty-First General Hospital by Washington University School of Medicine, St. Louis, and the Fifty-Second Evacuation Hospital was organized at Pennsylvania Hospital, Philadelphia. These units are made up of physicians and nurses serving at these hospitals; the officers have all been members of the medical reserve corps, while the nurses have been registered with the American Red Cross. Most of these units saw service in World War No. 1, at which time they were organized and equipped by the Red Cross, while now they are under the direct supervision of the Surgeon General of the Army as to organization and equipment.

CALL FOR BLOOD DONORS FOR THE ARMY

Although the army and navy forces in war areas now have blood plasma collected by the American Red Cross, even larger donations must be made if our forces are to be fully supplied with blood. Supplies of plasma have been delivered to the army and navy posts in the various Atlantic bases, the Philippines and throughout the Far East war area through the donations obtained by the American Red Cross. Col. Charles C. Hillman of the Surgeon General's Office, Washington, D. C., issued an urgent call on January 25 for additional blood donors. During the week of December 7 5,000 pints of blood in this country was volunteered in comparison with an average of about 1,000 pints during the period preceding the attack on Pearl Harbor. The goal of the Red Cross is to supply enough blood plasma not only for the army and navy but for civilian needs as well. The Red Cross has facilities already set up for the handling of hundreds of thousands of blood donations, and campaigns are under way to enroll additional civilian donors in sixteen of our largest cities.

CIVILIAN DEFENSE MEDICAL OFFICERS ON FIELD DUTY

Six medical officers have been appointed to Regional Offices of Civilian Defense to assist state and local defense councils in organizing Emergency Medical Service and carrying out the training and educational programs of the Medical Division. They have been commissioned as Senior Surgeons in the U. S. Public Health Service Reserve.

Dr. Allan M. Butler, First Civilian Defense Region, 101 Milk St., Boston, Mass.

Dr. H. Van Zile Hyde, Second Civilian Defense Region, 111 Eighth Ave., New York, N. Y.

Dr. W. Ross Cameron, Third Civilian Defense Region, 400 Cathedral St., Baltimore, Md.

Dr. William S. Keller, Fifth Civilian Defense Region, 427 Cleveland Ave., Columbus, Ohio.

Dr. W. Booth Russ, Eighth Civilian Defense Region, Majestic Bldg., San Antonio, Texas.

Dr. Wallace Hunt, Ninth Civilian Defense Region, 233 Sansome St., San Francisco, Calif.

CIVILIAN PROTECTION AREAS IN ILLINOIS

The chairman of the civil protection division of the Illinois state council of defense has announced the boundaries of the nine regions into which the state is to be organized for civil protection. The region boundaries in general follow the boundaries which have been fixed already for the state highway police operations. They have been subdivided into thirty-five warning districts, which vary in size according to the density of the population and of the industries within them. The plan provides that every rural section comprising 6 square miles will have an observation post and every town of two thousand five hundred or more population will have a report center. The chairman, Mr. William F. Waugh, announced the appointments of the liaison officers and others in the various regions.

SOUTH CAROLINA ORGANIZES EMERGENCY SERVICE UNITS

Representatives of every county in South Carolina met in Columbia on December 30 to plan the organization of emergency medical service units. The chief medical officer of the medical division of the South Carolina Council for National Defense, Dr. H. Grady Callison, presided. Among the speakers were Major G. Heyward Mahon, director of the South Carolina Council for National Defense; Lieut. Col. Ragnar E. Johnson, chemical officer at Fort Jackson; Dr. Floyd Rodgers, Columbia; Dr. Robert Wilson, Charleston; Dr. C. O. Bates, Greenville, and Dr. James A. Hayne, Columbia, state health officer. Among those present were medical officers for each of the eight medical districts of the state and the various county chief medical officers, as well as members of the state board of health, Drs. George Truluck and Dr. Thomas A. Pitts, president and president-elect, respectively, of the South Carolina Medical Association.

STUDENTS ENLISTING IN CLASS V-1, U. S. NAVAL RESERVE

Effective immediately, students in school or college who have not yet reached their twentieth birthday may enlist in class V-1 of the U. S. Naval Reserve and, on their own request, may be placed on inactive duty until the completion of the current scholastic year unless the military situation necessitates the Navy Department's calling them to active duty beforehand. Rear Admiral Randall Jacobs, U. S. Navy, Chief of the Bureau of Navigation, announced on January 22. Schools and colleges will be encouraged to give extra physical training and studies to young men who enlist in this category during the next four months as recommended by the Bureau of Navigation. The commandants of all naval districts have been directed not to call any of these men to active duty until orders have been issued by the Bureau of Navigation. In announcing the new opportunities for students, Rear Admiral Jacobs stated that naval recruiting will continue on a voluntary basis.

CONSULTANTS IN MEDICAL AND DRUG SUPPLIES

Dr. Robert P. Fischelis, chief chemist of the New Jersey Board of Pharmacy, member of the New Jersey Board of Health, has been released from those duties in order to give part time service as chief of the section of Medical and Health Supplies of the Civilian Supply Division of the War Production Board in Washington. Dr. Fischelis will organize a staff of consultants and specialists in hospital, medical and drug supplies. Their function will be to study civilian needs and plan for the allocation of health and medical supplies; also the problem of replacing drugs derived from foreign sources and now not available, and the possible replacement of certain drugs derived from scarce materials with drugs of similar therapeutic action derived from more plentiful sources.

ORTHOPEDIC MECHANIC POSITIONS OPEN

An examination has been announced by the Federal Civil Service Commission to secure orthopedic mechanics for the Army services. The salary is \$2,000 a year. Persons may qualify under the following optional subjects: (1) general, (2) bracermaker, (3) shoemaker and leatherworker and (4) limbmaker. Because of the demand for qualified eligibles, applications will be accepted at the Civil Service Commission's Washington office until further public notice.

Persons appointed will construct, design, alter and repair orthopedic appliances as indicated by the optional subjects. This includes working from living models and plaster casts, doing nickel plating, and shaping, grinding and polishing metals used in orthopedic appliances.

Applicants will not take a written test but will be rated on the extent and quality of their experience. They must have had five years of appropriate experience in orthopedic work within the past ten years. Under the option "shoemaker and leatherworker," persons whose experience has been in general shoe repair will not be considered qualified.

Examination announcements and application forms may be obtained at first and second class post offices and from the Civil Service Commission, Washington, D. C.

SOLDIERS' IDENTIFICATION TAGS

The War Department has revealed that the new identification tag worn by United States soldiers carries besides the soldier's name and serial number the name and address of the person to be notified in case of emergency, his religion, the date on which tetanus immunization was completed and his blood type. The present identification tag is made of stainless and rustproof monel metal, instead of aluminum as it was in the first World War; aluminum sometimes deteriorates as a result of chemicals and acids encountered on the battlefield. The present tag is 2 inches long, 1½ inches wide and .001 inch thick, with rounded corners.

AMBULANCES PRESENTED TO PHILADELPHIA

On behalf of the British American Ambulance Corps its president, Mr. William V. C. Ruxton, presented two ambulances on Dec. 18, 1941 to the mayor of Philadelphia for service with the mayor's civilian defense committee. The British American Ambulance Corps also presented two four stretcher ambulances to the city of San Francisco at the request of Mayor Angelo J. Rossi; these ambulances left New York on December 15. The British American Ambulance Corps is an American organization founded to relieve suffering and for months has sent to the British various urgently needed supplies. Now the ambulance corps is also actively engaged in defense work and the supplying of such needs of the American armies. The corps has sent ambulances to training camps in the United States and to newly acquired naval bases in Newfoundland and Iceland.

DEEP RED LIGHT BETTER THAN BLUE IN BLACKOUTS

Extensive experimentation by the army engineer corps reveals, the War Department announced on January 16, that a deep red light is much more satisfactory than the widely accepted blue light. Blue is more easily observed from the air than deep red, which also gives better illumination on the ground and aids the eyes to become adapted to the darkness. The disadvantage of using deep red, the announcement said, is the possibility of confusion with tail lights on motor vehicles; furthermore, since red illumination is not normal, it may, if not properly used, betray the installation which is to be concealed. All things considered, properly hooded low intensity white light is more generally applicable to blackout illumination problems than colored illumination.

CLEVELAND'S LAKESIDE UNIT ON ACTIVE SERVICE

The medical officers of U. S. Army General Hospital No. 4 left Cleveland on January 10 for active military service. The unit comprises physicians from Lakeside Hospital, City Hospital and other hospitals of Cleveland associated with Western Reserve University Medical School. The unit retains the number of its predecessor, which served in World War No. 1 with distinction at Rouen, France. Like the former hospital, which, the *Bulletin* of the Academy of Medicine of Cleveland says, was the first detachment of the American Expeditionary Forces to arrive in France, the present unit responded to the early call to military duty. When the entire personnel of the Lakeside Unit is assembled, it will number several hundred, including about fifty physicians, one hundred and twenty nurses, technicians, orderlies and cooks. The commanding officer is Col. William L. Starnes of the regular army medical corps; chief of the medical service is Lieut. Col. Joseph M. Hayman, professor of clinical medicine and therapeutics at Western Reserve University School of Medicine; the chief of the surgical service is Lieut. Col. William C. McCally, assistant clinical professor of surgery at Western Reserve. The head of the nursing staff is Miss Olga Benderoff, assistant director of nursing at University Hospitals, Cleveland. Seventy-two nurses assigned to Army Base Hospital No. 4 left Cleveland on January 19 en route to join the unit. The following additional physicians are members of the unit:

Surgical Service: Majors David A. Chambers, Donald M. Glover, James J. Joelson, John H. Lazzari and Wilbert H. McGaw. Capts. Sidney E. Blandford, Paul W. Gebauer, William Gernon, Carl A. Hamann, Donald A. Kelly, John J. Thornton, Vladimir L. Tichy, Elden C. Weckesser, Webb P. Chamberlain Jr. and Charles W. Elkins. First Lieuts. Cleon C. Couch, William W. Markley, Elmer P. Maurer, Ralph E. Gray and Valdemar M. Jordan.

Medical Service: Majors R. O. Egeberg, William R. Hal-laran, Edward O. Harper, Boyd G. King, William A. Read, Ralph L. Cox and Irwin Clay Hanger. Capts. Paul M. Glenn, Leo Walzer, Graham T. Webster, Walter M. Solomon, Frank M. McDonald, David R. Weir, L. H. Bronson and L. P. Longley. First Lieuts. James H. Donnelly, John P. Eichhorn, John R. McKay and Karl Rundell.

Laboratory Service: Major William B. Wartman, Capt. Joseph R. Kahn and First Lieut. H. H. Johnson.

Dental Corps: Capt. Henry J. Toomey and First Lieuts. Homer V. Briggie, Joseph W. Foltz, Anthony J. Tomaro, John E. McNally and Edward Ferreri.

Roentgenologic Service: Major Eugene Freedman, Capt. Joseph L. Morton and First Lieut. Isadore Meschan.

Administrative Service: Major Guy Brugler.

UNDERGRADUATE DEFENSE PROGRAM IN TRAINING NURSES

A three year undergraduate defense program for training student nurses in nine cooperating and affiliate schools is being administered by Wayne University, Detroit, with a \$48,690 fund granted to the university by the government. Miss Eleanor King, former instructor in nursing at Yale University and the University of California, has been named assistant coordinator of the three year program. The coordinator, Miss Louise Alfsen and Miss Eleanor King will give special attention to the training of nurses in communicable diseases and surgical and medical procedures.

MEDICAL AID FOR RUSSIA

The Springfield, Mass., Committee for Russian War Relief announced on January 22 through headquarters of Russian War Relief, Inc., 535 Fifth Avenue, New York, that Dr. Garry DeN. Hough Jr. of Springfield will head a group of medical men aiding the committee in its effort to get medical supplies to Russia; others in the group are Drs. Harold F. Budington, William A. R. Chapin, James B. Comins, Arthur E. F. Edgelow, Frederick S. Hopkins, Edward Katz, Roswell G. Mace, Oliver J. Menard, Mendel Poliak, Bernard Rabinovitz, Walter W. Williams, Charles F. Lynch, Joseph P. Derby and Salvatore Sannella.

EVACUATION HOSPITALS CALLED TO ACTIVE DUTY

The second and seventh evacuation hospitals have been called into active duty. The second, from St. Luke's Hospital, New York, reported to Fort Devens, Mass., and the seventh evacuation hospital from New York Post-Graduate Hospital, New York, was ordered to Fort Dix, N. J. The commanding officers of the two hospitals are Lieut. Col. William F. MacFee, M.D., and Lieut. Col. Robert S. Lobban, M.D., respectively.

MEDICAL SERVICE ON THE BURMA ROAD

According to the Christian Medical Council for Overseas Work, 156 Fifth Avenue, New York, the Quakers have provided the Burma Road in China with a modern medical service with Dr. Robert B. McClure in charge and Dr. Henry L. Louderbough and "Dr. Boyd from India" on the staff. About fifty young Englishmen act as chauffeurs. Trucks sent from the United States were assembled in Rangoon; fifteen trucks were fitted out as ambulances, which were used also to transport Red Cross supplies to Free China. The American Volunteer Group keep the road open by attacking Japanese bombers who fly over it from Indo-China.

ESTIMATE OF MEN KILLED IN THE PRESENT WAR

According to the statisticians of the Metropolitan Life Insurance Company, New York, deaths in the armed forces of all of the belligerent nations in the present war probably have reached at least 1,500,000 and may exceed 2,000,000. This estimate of losses is based on the compilation of analysis of data from sources which the Metropolitan Information Service believed most reliable. In the first World War the statisticians estimated that 5,000,000 men had been killed in a corresponding period; that is, the period of July 1914 to the end of 1916.

COLONEL GRANT APPOINTED AIR SURGEON

The post of air surgeon in the U. S. Army was recently created, the War Department announced recently, and Col. David W. Grant, M.C., was the first officer assigned to the new position. The air surgeon, who will be a member of the staff of the chief of the Army air forces, will be head of a service to coordinate the medical activities in the air service. In Colonel Grant's case, this duty will be in addition to that performed by him as chief of the medical division, office of the chief of the air corps.

EMERGENCY MEDICAL FIELD SETS

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, during January has given eight emergency medical field sets to the medical directors of the second civilian defense region (New York, New Jersey, Delaware) and also one set each to Chicago, Minneapolis and Reno. The membership in the Medical and Surgical Relief Committee of America has been augmented in the last three months by the names of thirty-three physicians, bringing the total membership to three hundred and fifty-one.

SPECIAL DEFENSE PROJECTS AT WAYNE UNIVERSITY

As an outgrowth of the defense program, Wayne University College of Medicine, Detroit, has undertaken several special projects, among which are the preparation of an index of the literature on military medicine covering the period from 1939 to date, a study of "shock" and a special study of "bacteriologic aspects of wound infections." The index has already been microfilmed by the Army Medical Library for military use.

ERIE ORGANIZES EMERGENCY SQUADS

The medical defense committee of Erie, Pa., of which Dr. Arthur G. Davis is chairman for the local medical society, has organized eight emergency medical field units and established evacuation medical centers in each of the wards of the city. Each squad comprises four physicians, one dentist and four nurses. Four squads have been assigned to the Hamot and four to St. Vincent's Hospital. These hospitals also have organized emergency teams for the care of the injured after they reach the hospital, where emergency beds have been made available. These emergency squads and evacuation centers have already held several practice sessions.

THE O'REILLY GENERAL HOSPITAL

Col. George B. Foster, M. C., has been assigned as commanding officer of the new thousand bed O'Reilly General Hospital of the U. S. Army, which was recently dedicated at Springfield, Mo.; Lieut. Col. Allan W. Dawson, M. C., U. S. Army, has been assigned as executive officer.

MEETING OF SELECTIVE SERVICE AND INDUCTION BOARD PHYSICIANS

The Maryland Society of Selective Service and Induction Board Medical Examiners held a meeting in Baltimore, January 30, with Dr. Sydney R. Miller presiding. Albert C. Gakenheimer gave a demonstration of equipment for administration of blood plasma, Lieut. Col. Amos R. Koontz, M. C., discussed the new local board examination plan and Major Henry M. Thomas Jr., M. C., experience on the medical service of a station hospital.

JEFFERSON COUNTY ALABAMA FIRST AID STATIONS

Fifty physicians have been assigned to supervise the first aid stations in the twenty-one air raid warden areas in Jefferson County, Ala., in which Birmingham is located. The selections were made by the chief of the civilian defense emergency medical service, Dr. H. Earle Conwell, Birmingham, and approved by the director of the civilian defense council. The fifty physicians, in addition to supervising first aid stations, will have charge of the transportation of wounded in case of air raids or other disaster.

SYMPOSIUM ON NUTRITION

An exhibit on army nutrition and a symposium for reserve officers will be held Jan. 13, 1942, in the Federal Building, 90 Church Street, New York City, at 8:30 p. m. The speakers will be Col. Samuel Adams Cohen and H. I. Teperson of the medical reserve, Lieut. Col. James A. Tobey of the Sanitary Corps Reserve and Major Louis Griesman of the Veterinary Corps Reserve. The program is under the supervision of Lieut. Col. William C. Lippold, M. C., U. S. Army, and the chairman of the executive committee, Col. Milton I. Strahl.

LECTURE ON CHEMICAL WARFARE

Col. Curtis Claassen, M. C., U. S. Army, addressed the medical staff of Mount Sinai Hospital, New York, and the medical officer personnel of the Third General Hospital, U. S. Army, February 10, on "Defense Against Chemical Warfare and the Treatment of Gas Casualties."

SOLDIERS FORBIDDEN TO HITCH-HIKE

The War Department reminded all men in uniform January 18 that the solicitation of free rides is prohibited as being unmilitary and in some states unlawful. However, the War Department permits soldiers to accept offers of rides voluntarily made by individuals or organizations.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware.

DANGERFIELD, Harold 1st Lieut, Staten Island, N Y, Camp Lee, Va
FAZIO, Michael G, 1st Lieut, Brooklyn, Fort Dix, N J
GRUSKIN, Harry, 1st Lieut, Brooklyn, Fort Tilden, N Y
ISRAEL, Benjamin, 1st Lieut, New York, Camp Lee, Va
KAPLAN, Lawrence G, 1st Lieut, Forest Hills, L I, N Y, Fort Wadsworth, N Y
KLINE Ernest Hall, Captain, New York, Fort Hancock, N J
KUFLIK, William E, 1st Lieut, Brooklyn, Fort Wadsworth, N Y
LABARBERA, Thomas, 1st Lieut, Brooklyn, Fort Dix, N J

LEVINE Bernard R, 1st Lieut, New York, Fort Wadsworth, N Y
LITTMAN, Julius Kiva, 1st Lieut, New York, Camp Lee, Va
MANNING, Ephraim L, 1st Lieut, Yonkers, N Y, Camp Lee, Va
McDONNELL, George J, 1st Lieut, Freehold, N J, Fort Hancock, N J
MILES, Anthony W, 1st Lieut, Brooklyn, Fort Wadsworth, N Y
PAPPALARDI, Felix A, 1st Lieut, New York, Fort Hancock, N J
SEAMAN, George J, 1st Lieut, Brooklyn, Fort Dix, N J
SHERMAN, Pincus, 1st Lieut, New York, Pine Camp, N Y
SHIFFMAN, Morris, 1st Lieut, New York, Headquarters 2d Military Area
SIMON, Charles, 1st Lieut, Brooklyn, Fort Niagara, N Y
WARNOCK, George H, 1st Lieut, Freeport, L I, N Y, Fort Sheridan, Ill
WEISS, Bernard, 1st Lieut, Poughkeepsie, N Y, Fort Niagara, N Y
WYCOFF, Joseph W, 1st Lieut, Hicksville, N Y, Fort Monmouth, N J

FOURTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Fourth Corps Area, which comprises the states of Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi, Florida and Louisiana:

BOOKER, John Parks, 1st Lieut, Walhalla, S C, Camp Gordon, Ga
HOLBROOK, Joseph Samuel, 1st Lieut, Statesville, N C, Camp Blanding, Fla
HULI Wallace A, 1st Lieut, Indianola, Miss, Camp Tyson, Tenn
JENKINS, Hughes B, Major, Donaldsonville, Ga, Camp Gordon, Ga
LAIRD, Earl Lee, 1st Lieut, Union, Miss, Camp Gordon, Ga
LANCASTER, Lamar L, 1st Lieut, Bartow, Fla, Camp Gordon, Ga
IOBRANO, Charles M, 1st Lieut, Memphis, Tenn, Fort McPherson, Ga
MASON, James M, III, 1st Lieut, Birmingham, Ala, Fort Bragg, N C

TUCKER, Landrum S, 1st Lieut, Rogersville, Tenn, Camp Tyson, Tenn
VINSANT, Lowell Eugene, 1st Lieut, Knoxville, Tenn, Camp Gordon, Ga
WEATHERLY, George Irving, Jr, 1st Lieut, Fort Payne, Ala, Camp Forrest, Tenn
WOLFE, Albert B, 1st Lieut, Orangeburg, S C, Camp Gordon, Ga

Orders Revoked

BRANTLEY, James W, 1st Lieut, Grandin, Fla
BURTON, John Paul, 1st Lieut, New Orleans
GEORGE, Wallace E, 1st Lieut, West Columbia, S C
JAFKE, Bernard, 1st Lieut, Asheville, N C
LOGAN, James G, 1st Lieut, Natchez, Miss
NAUGLE, Thomas C, 1st Lieut, East Gradsden, Ala
NELSON, Thomas F, 1st Lieut, Tampa, Fla
ROZIER, John Simpson, 1st Lieut, Leesville, La
SHIPP, Larry G, 1st Lieut, Anniston, Ala

FIFTH CORPS AREA

The following named Medical Reserve officers were ordered to extended active duty by Fifth Corps Area order for the week ending January 16, 1942:

BECKER, William, 1st Lieut, Toledo Ohio, Fort Knox, Ky
CHAMBERLAIN, Webb P, Jr, Captain, Cleveland, Fort Hamilton, N Y
ECKSTEIN, Richard W, 1st Lieut, Cleveland Erie Proving Ground
ELKINS, Charles W, Captain, Lakewood, Ohio, Fort Hamilton, N Y
HANGER, Irwin C, Major, Beechwood Village, Ohio Fort Hamilton, N Y
HARVEY, Bennett B, 1st Lieut, Indianapolis Camp Grant Ill
HOY, Robert T, Jr, 1st Lieut, Fort Thomas Ky, Fort Thomas Ky
IMBURGIA, Frank J, 1st Lieut, Marion, Ind, Fort Benjamin Harrison, Ind
JOHANSON, Herbert H, Jr, 1st Lieut, Cleveland, Fort Jackson, S C

JORDAN, Valdemar M, 1st Lieut, Cleveland Heights, Ohio Fort Hamilton, N Y
OLSEN, Albert L, Captain, Marion, Ind, Fort Hayes, Ohio
ROSSMILLER, Harold R, 1st Lieut, Cleveland, Fort Benjamin Harrison, Ind
RUNDELL, Kail D, 1st Lieut, Owego, N Y, Fort Jackson, S C
SWANN, Lyson Bernard, 1st Lieut, Louisville, Ky, Erie Proving Ground, Lacarne, Ohio
TANNO, Anthony M, 1st Lieut, Cleveland, Fort Benjamin Harrison, Ind

Orders Revoked

JASKIEWICZ, Casimir F, 1st Lieut, Logan, W Va
MORRISON, William H, 1st Lieut, Howe, Ind
PETRO, George J, 1st Lieut, Louisville, Ky
TOUPKIN, Jerome H, 1st Lieut, Raleigh, W Va
WILSON, Orley E, 1st Lieut, Elkhart, Ind

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming.

BIZZELL, Ross, 1st Lieut, Little Rock Ark, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
CASH Paul Thibert, 1st Lieut, Omaha, Corps Area Service Command Station Hospital Fort Omaha, Neb
HUNDLIFY, Louis King, Captain Fayetteville, Ark, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
LAWSON, Mason Glynn, 1st Lieut, Texarkana, Ark, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
MINER, Paul Floyd, 1st Lieut, Laramie, Wyo, Corps Area Service Command Station Hospital, Fort Francis E Warren, Wyo
RADI Robert Bernard, Major, Bismarck, N D, State Headquarters Selective Service, Bismarck N D
RIGGINS Winston Calvary, 1st Lieut Little Rock, Ark, Corps Area Command Service Station Hospital, Camp J T Robinson, Ark

SETTLE, Emmett Bird, Captain, Rockport, Mo, Corps Area Service Command Station Hospital, Fort Leavenworth, Kan
WILLIAMS, John Westerfield, 1st Lieut, Springfield, Mo, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo

Orders Revoked

FREEDLAND, Morris E, 1st Lieut, Minneapolis
FROGNER, Lester E, 1st Lieut, Grand Marais, Minn.
HARTWIG, John A, Captain, St Louis

Relieved from Active Duty

BAKER, Joseph Harrison, Captain, LaCrosse, Wis, Corps Area Service Command Station Hospital, Fort Riley, Kan
GANSCHOW, John Henry, 1st Lieut, Hedrick, Iowa, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
LUEDDE, Philip Shrock, Captain, St Louis, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
MILLER, Richard White, 1st Lieut, Fayetteville, Ark, Army and Navy General Hospital Hot Springs, Ark
ZELIGS Isadore 1st Lieut Iowa City, Corps Area Service Command Station Hospital Fort Riley, Kan

EIGHTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Eighth Corps Area, which comprises the states of Colorado, Arizona, New Mexico, Oklahoma and Texas:

BAILEY, William M., Lieut Colonel, Tyler, Texas, Recruiting Station, Sante Fe, N. M.
BOGUSKIE, William M., Captain, Hearne, Texas, Corps Area Service Command, Camp Berkeley, Texas
DAVIS, James H., Colonel, Fort Worth, Texas, Recruit Reception Center, Camp Wolters, Texas
FIEGEL, Walter L., 1st Lieut., Lewisville, Texas, Station Hospital, Fort Sill, Okla.
FIELDING, Lewis J., 1st Lieut., Waco, Texas, District Recruiting Office, Phoenix, Ariz.
FOWLER, Harmon L., Colonel, Denver, Recruit Reception Center, Fort Bliss, Texas
GAMBRELL, James H., Colonel, El Paso, Texas, Station Hospital, Camp Berkeley, Texas
GLOVER, George E., Lieut Colonel, Austwell, Texas, Recruit Reception Center, Fort Sam Houston, Texas
KELLER, Louis, 1st Lieut., Whipple, Ariz., 45th Division, Camp Berkeley, Texas
LAWRENCE, Gerald P., Colonel, Mayhill, N. M., Reception Center, Fort Sill, Okla.

LEVINE, Milton, Captain, Fort Bayard, N. M., 36th Division, Camp Bowie, Texas
LEWIS, W. B., Colonel, Denver, Colorado Recruiting District, Fort Logan, Colo.
MATTS, Robert M., Captain, Yuma, Ariz., 25th Infantry, Fort Huachuca, Ariz.
POORE, Alfred M., 1st Lieut., Waco, Texas, Station Hospital, Fort Sill, Okla.
ROBERTSON, Robert C. L., 1st Lieut., Houston, Texas, Station Hospital, Fort Sam Houston, Texas
SHADDIX, James W., Lieut Colonel, Shamrock, Texas, Recruiting Station, Lubbock, Texas
SHIELDS, Thomas L., 1st Lieut., Dallas, Texas, 2d Infantry Division, Fort Sam Houston, Texas
STUCK, Ralph M., 1st Lieut., Denver, Station Hospital, Fort Bliss, Texas
WILHITE, Lee Roy, Colonel, Perkins, Okla., U. S. Army Recruiting Station, Houston, Texas

Orders Revoked

BARSH, Albert G., 1st Lieut., Stephenville, Texas.
DAVIS, Robert L., 1st Lieut., Williams, Ariz.
KILMAN, Prather T., Captain, Malakoff, Texas
KINSINGER, Ralph R., 1st Lieut., Blackwell, Okla.
MCCURDY, William C., Jr., 1st Lieut., Purcell, Okla.
MCGEEHEE, Frank O., 1st Lieut., Memphis, Tenn.
PRESTON, Thomas K., 1st Lieut., Muskogee, Okla.
SALMON, George W., 1st Lieut., St. Louis
SCIRE, Feliciano J., 1st Lieut., Keams Canyon, Ariz.

ORDERED TO FOREIGN DUTY

[Some of these orders were issued prior to Dec. 8, 1941]

ANDERSON, Vetalis Vernon, 1st Lieut., Fort Bliss, Texas, 200th Coast Artillery (Antiaircraft), Fort Stotsenburg, Philippine Islands
ANDLER, Maxwell M., Jr., 1st Lieut., Brookline, Mass., 12th Medical Regiment, Fort William McKinley, Philippine Islands
BARNES, Louis Dwight, Major, 57th Infantry, Fort William McKinley, Philippine Islands
BARSHOP, Nathan, Captain, Los Angeles, Station Hospital, Fort Stotsenburg, Philippine Islands
BLOOM, Manuel Gordon, 1st Lieut., Houston, Texas, Station Hospital, Fort Mears, Dutch Harbor, Alaska
BOLTON, Leslie Turner, Lieut Colonel, Reno, Nev., Headquarters Philippine Department Fort Santiago, Manila, Philippine Islands
BULFAMONTE, Joseph Charles, 1st Lieut., Fort William McKinley, Philippine Islands
BURGE, Julius Caesar, Jr., 1st Lieut., York S. C., Station Hospital, Fort William McKinley, Philippine Islands
CARTER, James Weldon, 1st Lieut., Lubbock, Texas, Fort Amador, Balboa, Canal Zone
CHOISSER, John Elder, Lieut. (j. g.), M. C. V. (G) N. R., Eldorado, Ill., U. S. S. Boise, Pearl Harbor, Hawaii
COCHRAN, Joel Layton, Major, Camp Wolters, Texas, Fort Amador, Balboa, Canal Zone
COLBY, Elliott Gillette, Lieut Colonel, N. G., San Diego, Calif., 251st Coast Artillery (Antiaircraft), Camp Malakole, Hawaii
COLVARD, George Todd, Major, N. G., Fort Bliss, Texas, 200th Coast Artillery (Antiaircraft), Fort Stotsenburg, Philippine Islands
COMSTOCK, Jack Arthur, 1st Lieut., Denver, Sternberg General Hospital, Manila, Philippine Islands
CONLAN, Francis Joseph, 1st Lieut., San Francisco, Station Hospital, Fort Mears, Dutch Harbor, Alaska
DOBIAS, Stephen Glenn, 1st Lieut., Fort Leavenworth, Kan., Fort Greely, Kodiak, Alaska
DONNELLY, Verner Judson, Lieut. (j. g.), M. C. V. (G) N. R., Plainview, Texas, U. S. S. Minneapolis, Pearl Harbor, Hawaii
FLOCKS, Milton, 1st Lieut., Baltimore, U. S. Engineers, Boringuen Field, Puerto Rico
FOLSOM, Charles Walton, Captain, Sternberg General Hospital, Manila, Philippine Islands
GARRETT, Robert Thompson, 1st Lieut., Southampton, N. Y., Hickam Field, Hawaii
GLUSMAN, Murray, Lieut. (j. g.), M. C. V. (S) N. R., New York, Dispensary, Navy Yard, Cavite, Philippine Islands
HALL, Joseph Leslie, 1st Lieut., Fort William McKinley, Philippine Islands
HANKINS, Charles Robert, 1st Lieut., Fort Leonard Wood, Mo., Seward, Alaska
HELSTIEY, Gordon Friedrich, Lieut Colonel, N. G., Fresno, Calif., Fort Greely, Kodiak, Alaska
JACOB, Samuel Sprigg, III, Captain, Station Hospital, Corozal, Canal Zone
JORDAN, Fred Covington, Jr., 1st Lieut., Phoenix, Ariz., Fort Ruger, Honolulu, Hawaii
JULIA, Carlos M., Captain, N. G., Rio Piedras, Puerto Rico, Camp Tortuguero, San Juan, Puerto Rico
KELLY, Alex Rennie, Jr., 1st Lieut., Camp Davis, N. C., Station Hospital, Fort William McKinley, Philippine Islands
KESCHNER, Harold Walton, 1st Lieut., New York, Sternberg General Hospital, Manila, Philippine Islands
MCGUIGAN, Robert Alister, Lieut. (j. g.), M. C. V. (G) N. R., Evanston, Ill., U. S. S. Dobbin, Pearl Harbor, Hawaii
MOONEY, Robert Davis, 1st Lieut., Station Hospital, Fort Richardson, Alaska
OLIVER, Claudius Hansen, Lieut Colonel, San Antonio, Texas, Fort Davis, Canal Zone
OSBORNE, Charles Eugene, 1st Lieut., Camp Wheeler, Ga., Fort Stotsenburg, Philippine Islands
PASSALACQUA, Luis Antonio, Captain, N. G., Ponce, Puerto Rico, Station Hospital, Losey Field, Ponce, Puerto Rico
PHILLIPS, Claude Mason, Captain, San Antonio, Texas, Camp Paraiso, Canal Zone
RAMSAY, Lewis Cowan, 1st Lieut., Medical Department, 804th Engineers, Schofield Barracks, Honolulu, Hawaii
SERVOSS, Spencer Joseph, 1st Lieut., Medina, N. Y., Medical Dispensary, Albrook Field, Canal Zone
SCHLESINGER, George Gerard, Lieut. (j. g.), M. C. V. (G) N. R., New York, Submarine Base, Pearl Harbor, Hawaii
SCHULTZ, Frank Bernard, Captain, Falls Church, Va., Tripler General Hospital, Honolulu, Hawaii
SHAPIRO, William Mordecai, Lieut Colonel, Toledo, Ohio, Station Hospital, San Juan, Puerto Rico
SHIVELY, Russell Lowell, 1st Lieut., Celina, Ohio, Henry Barracks, Cayey, Puerto Rico
SILVA, Euripedes, Lieut Colonel, N. G., San Juan, Puerto Rico, Camp Tortuguero, San Juan, Puerto Rico
SIMMONS, Warren Kousch, 1st Lieut., Station Hospital, Fort Mears, Dutch Harbor, Alaska
SLAGLE, Thomas Dick, Lieut., M. C. V. (S) N. R., Franklin, N. C., 10th Naval District, San Juan, Puerto Rico
SMITH, Martin Pendry, Lieut. (j. g.), M. C. V. (S) N. R., Erie, Pa., Naval Hospital, Guam
STILSON, Homer Oscar, 1st Lieut., N. G., 251st Coast Artillery (Antiaircraft), Camp Malakole, Hawaii
STONE, Charles Michael, Lieut. (j. g.), M. C. V. (S) N. R., Jamaica, N. Y., Naval Mobile Base Hospital No. 2, Pearl Harbor, Hawaii
THOMPSON, Charles Middleton, II, Lieut., M. C. V. (S) N. R., Newtown, Pa., Naval Hospital, Pearl Harbor, Hawaii
THOMPSON, Ferris Wilson, Lieut Commander, M. C. V. (G) N. R., Aiea, Hawaii, Naval Hospital, Pearl Harbor, Hawaii
TONG, Fook Hing, Captain, N. G., Honolulu, Hawaii, 299th Infantry, Camp Pankukilo, Wailuku, Hawaii
TRENLER, Clarence William, Lieut., M. C. V. (S) N. R., Honolulu, Hawaii, Submarine Base, Pearl Harbor, Hawaii
URE, William Grant, Tucson, Ariz., Station Hospital, Fort Greely, Kodiak, Alaska
VANDEVALDE, Joseph Daniel, 1st Lieut., Fort William McKinley, Philippine Islands
WADSWORTH, John Henry, 1st Lieut., Cobleskill, N. Y., Station Hospital, Boringuen Field, Puerto Rico
WALKER, Price Mars, Major, Dallas, Texas, Station Hospital, Schofield Barracks, Honolulu, Hawaii
WHITE, William Alvin, Jr., Lieut. (j. g.), M. C. V. (G) N. R., Cincinnati, Ohio, Naval Hospital, Pearl Harbor, Hawaii

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 2240 has been ordered reported by the Senate Committee on Military Affairs, proposing to establish a Women's Army Auxiliary Corps for service with the Army of the United States. H. R. 3539, has passed the House and is pending in the Senate with a favorable committee report providing, in effect, that revenue derived from the operation of Indian Service hospitals in Alaska shall be available for expenditure for the benefit of such hospitals.

Bills Introduced.—H. R. 6521, introduced by Representative Beiter, New York, proposes to extend the benefits of the Soldiers' and Sailors' Civil Relief Act in connection with mortgages and instalment contracts to transactions originating subsequent to Oct. 17, 1940. Under existing law relief is provided by the act only with respect to such transactions originating prior to the date named. H. R. 6524, introduced by Representative Secrest, Ohio, proposes to increase the federal appropriation available to provide books for the adult blind. H. R. 6525, introduced by Representative Voorhis, California, provides compensation for personnel sustaining disease or injury while performing civilian defense duty.

STATE MEDICAL LEGISLATION

Kentucky

Bills Introduced.—S. 76 proposes to prohibit the operation of any hospital or clinic, whether private or governmental, without a license to do so from the state board of health. H. 144 proposes to enact a practice act for dental hygienists to be administered by the state board of dental examiners. "Dental hygiene" is defined in the bill to mean the treatment of human teeth by removing therefrom calcareous deposits, and by removing accumulated accretion from directly beneath the free margin of the gums, and by polishing the exposed surface of the teeth.

Mississippi

Bills Introduced.—H. 231 proposes to authorize counties, cities and towns, separately or jointly, to own, erect, maintain and operate hospitals, and to levy taxes to raise necessary funds for such purposes. H. 361 proposes to authorize the board of supervisors of the various counties in the state to levy annually, in addition to the levy for indigent sick, a special tax of not exceeding 1 mill on all the taxable property of the county to raise sufficient funds for necessary medical, dental or other treatment to children up to 16 years of age in need of and unable to procure care. H. 298, to amend the law creating a state hospital commission to reimburse certain approved hospitals for hospital care rendered indigent patients, proposes to abolish the state hospital commission provided for therein and to provide in lieu thereof for the appointment of a state hospital commissioner by the state board of health and to vest all of the power and authority now vested in the state hospital commission in that commissioner.

South Carolina

Bill Introduced.—S. 980, to amend the uniform narcotic drug act, proposes (1) to define narcotic drugs so as to include cannabis in addition to "coca leaves, opium, and every substance neither chemically nor physically distinguishable from them," the definition in the present law, and (2) that the provisions of the act shall not apply to the administering, dispensing or selling at retail of any medicinal preparation that contains in 1 fluid ounce, or if a solid or semisolid preparation, in 1 avoirdupois ounce, not more than 1 grain of codeine or of any of its salts. The present law provides a similar exemption with respect to

preparations which in the quantities stated do not contain more than 2 grains of opium, $\frac{1}{4}$ grain of morphine, 1 grain of codeine, or $\frac{1}{8}$ grain of heroin.

New York

Bills Introduced.—S. 245 and A. 288 propose to provide for the reimbursement by the state to each public welfare district for hospital care rendered to patients suffering from tuberculosis. S. 491 proposes to require the board of education in each city of the state to establish, maintain and equip a permanent staff of physicians, psychiatrists, dentists, dental hygienists and nurses for the periodic examination and promotion of the health of the children of school age in such city. S. 523 proposes to require every local board of health and every health officer to exercise proper and vigilant medical inspection of all persons 21 years of age or over, infected with poliomyelitis and, after approval by the state commissioner of health, provide at the remedial stages of the disease suitable surgical, medical or therapeutic treatment or hospital care, and necessary appliances and devices for such persons so infected or exposed who cannot otherwise be provided for. One half of the cost of providing the necessary treatment, care and appliances is made a charge against the county, or the city of New York, as the case may be, in which such person resides, and the remaining one half is to be paid by the state. A. 604 proposes to authorize the establishment and operation of a psychiatric bureau as an adjunct of the children's court in any county, for the physical, mental and psychiatric examination of persons within the jurisdiction of the court. Any such bureau shall be staffed with one or more competent psychiatrists and others, in accordance with appropriate authorization, who shall be appointed by the judge of the court and serve under his direction.

New Jersey

Bill Introduced.—S. 10, to amend the dental practice act, proposes, among other things, that the act shall not apply to the treatment of the diseases of the mouth and practice of oral surgery in the practice of his profession by a physician or surgeon licensed under the laws of the state, unless he undertakes to reproduce or reproduces lost parts of the human teeth in the mouth or to restore or replace lost or missing teeth in the mouth. Under the present law, apparently, the act, as far as the practice of licensed physicians and as far as specific language is concerned, does not apply to the rendering of dental relief in emergency cases by a physician in the practice of his profession.

Virginia

Bills Introduced.—S. 110, to amend the medical practice act, proposes to increase the per diem remuneration to be paid to members of the board of medical examiners to \$10 and to increase the annual salary of the secretary of the board to \$2,000. H. 166, to supplement the medical practice act, proposes to make it unlawful for any person to engage in the practice of medicine in the state without first having obtained from the board of medical examiners the necessary license or certificate and without first having recorded the license or certificate with the clerk of the appropriate court. H. 195 proposes to enact a separate chiropractic practice act and to create an independent chiropractic board of examiners to examine and license applicants for licenses to practice chiropractic. The bill proposes to define chiropractic as "the adjustment of the twenty-four movable vertebrae of the spinal column and other articulations, and assisting nature, for the purpose of facilitating the transmission of nerve energy." The bill proposes that a chiropractic licensee may use such methods as are taught by chiropractic schools and colleges to further

assist nature in establishing the normal transmission of nerve energy, but is prohibited from practicing operative surgery, obstetrics, osteopathy, and from administering or prescribing any drug or medicine. Such a licentiate is to be permitted to use the title "Dr." in connection with his name when accom-

panied by the word "chiropractor" or the letters "D.C." S. 120 proposes to prohibit any institution of learning in the state, unless accredited by the state board of education, from conferring any college degree, whether academic, professional or honorary.

MEDICAL ECONOMIC ABSTRACTS

JAPAN'S RESOURCES

While Japan demands greater space for her population, she bends all her energies to increasing that population. Moreover, industrial and general social conditions maintain that threaten to destroy the producing power of the population. The statisticians of the Metropolitan Life Insurance Company, after a study of Japan's population conditions, point to a rather abrupt reversal from a fairly rapid increase to a pronounced decline about 1935. Then the cabinet, early in 1941, entered on a program which aimed to increase Japan's population from its present figure of seventy-three million to a hundred million in 1960. This plan offers subsidies to large families with corresponding penalties to small families and unmarried persons.

While Japan has eleven million men in the principal military age, 20 to 44, the United States has a reserve of more than double that number. This is due not only to our greater total population but to the fact that the United States has 38.5 per cent of its male population in this military age group while Japan has only 34 per cent. The general death rate in Japan is comparable to that in the United States forty years ago. While the tuberculosis death rate in this country is 45 per hundred thousand, it was 204 per hundred thousand in Japan in 1937.

Another side of the picture is seen in the world economic survey of the League of Nations published in this country by the University of Columbia Press. This shows that even in 1939 Japan was beginning to show signs of fatigue in her economic system. In the early part of that year "it was recorded, for instance, that a considerable increase in the number of fires in factories in the Tokyo area was largely due to the excessive fatigue of the workers. Moreover, the statistics of sickness, accidents and absence from work began to rise. Accordingly, on March 31, 1939 the government issued an order for the protection of workers employed in branches of industrial activity where work necessitated by the requirements of national defense was carried on. This order, fixing a maximum working day of twelve hours, came into effect on May 1. In the spring of 1938 a 'National General Mobilization Law' was enacted with the object of increasing the supply and efficiency of labor and of raising the productivity of industrial equipment. In April 1940 a Japanese source stated that it was 'doubtful' whether the result had been 'satisfactory.' 'Labor efficiency,' it said, 'has lately become strikingly low.'

"The material equipment was likewise deteriorating. Plant and machinery were wearing out and could not be adequately replaced; and this consumption of capital was taking place not only in the 'inessential' consumer trades but also in the armament industries." As a result of these conditions, the survey

points out that as "Japan has been at war continuously since the middle of 1937 she has had time to organize her war economy to the limit of her capacity; and yet in 1940-41 she was not able to extract much more than a quarter of her national income for war purposes. In a relatively poor country, obviously the margin between total production and the subsistence minimum of consumption is narrow."

NEW MORTALITY RECORD

In spite of a minor influenza epidemic and the dislocation of the population as a result of national defense efforts, the statisticians of the Metropolitan Life Insurance Company declare that the 1941 death rate of 7.4 per thousand was the lowest ever attained in any year by their company's millions of industrial policyholders, and, as a result, the expectation of life of these insured persons was advanced to 63.4 years, a gain of some six months over the 1940 figure of 62.9 years.

Owing largely to the sharp rise in motor vehicle fatalities, the death rate from accidents—all forms—increased. The motor vehicle fatality rate of 1941, 20.8 per hundred thousand, was 14.3 per cent above that of 1940 and the highest since 1937.

When the United States entered the first world war in 1917 the statisticians explain that the death rate among insured persons was 11.6 per thousand, or more than half as high again as that recorded for 1941.

The pneumonia death rate, as the result largely of the use of sulfonamide derivatives, dropped to the new low level of 30.5 per hundred thousand, which compares with 35.5 in 1940, 42.8 in 1939, 50.6 in 1938 and 66.9 in 1937. Prior to 1937 the pneumonia mortality rate had never fallen below 60 per hundred thousand.

Second only to the improvement in pneumonia mortality conditions was the situation with respect to tuberculosis, the death rate of which once more dropped to a new low point, as it has many times in recent years.

An interesting development with respect to tuberculosis has resulted in connection with the Selective Service Act. "As the rejections for respiratory diseases—largely tuberculosis—are but little below those in the last war," the statisticians explain, "while mortality from the disease has declined 77.3 per cent, it appears that a good job of early case finding is being done."

New minimal rates were also recorded last year for scarlet fever, diphtheria, appendicitis and diseases of the puerperal state. A minimum low maternal mortality rate occurred despite a sharp rise in the number of women exposed to the hazards of pregnancy and childbirth, since the birth rate in 1941 was the highest on record since 1930.

WOMAN'S AUXILIARY

California

The medical society is cooperating with the Alameda County woman's auxiliary in furnishing speakers for organizations requesting talks on medical subjects. It in turn has asked the auxiliary to be ready to assist the society by furnishing a telephone committee to handle appointments for volunteer donors to the San Francisco blood bank.

The outstanding activity at present in the San Francisco County auxiliary is that of sponsoring a day at the San Francisco Hospitality House, located in the Civic Center. The auxiliary is planning on providing at least three hundred young men with food and amusement during the day. The building

will be staffed that day with auxiliary members. The training schools of Stanford and of the University of California have been asked to cooperate with the doctors' wives by sending twenty-five girls from each of these schools. The girls will be called for and delivered back to their dormitories by members of the auxiliary. Mrs. Wilber Swett, general chairman, will be assisted by Mrs. Raleigh Burlingame, Mrs. John Humber, Mrs. John J. Loutzenheiser, Mrs. Roger B. McKenzie and Mrs. William A. Sumner.

At a recent meeting of the Woman's Auxiliary to the San Diego County Medical Society one hundred and one members and guests were served at luncheon. Invitations were issued to wives of Army and Navy physicians new in the community.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

New Health Center.—A new health and welfare center will soon be constructed in Tucson, according to the *Arizona Public Health News*. Health and welfare agencies will be housed in the new building, the architect's plans for which have already been approved.

Changes in Health Officers.—Dr. Abe L. Scheff, formerly of Rosedale, Miss., passed assistant surgeon, U. S. Public Health Service, reserve, has been appointed director of the Santa Cruz Health Service, which on January 1 ceased to be a part of Health District Number 1. According to the *Arizona Public Health News* the importance of Nogales and Santa Cruz County in the present emergency and the development of needed health services make a full time resident director necessary. —Dr. Robert M. Matts, Yuma, director of the Yuma County Health Service, has been called into active service.

CALIFORNIA

Library on Plastic Surgery.—On December 12 a collection of fifty-seven books on plastic surgery was received by the Library of the Los Angeles County Medical Association, Los Angeles, under a bequest in the will of the late Dr. Howard L. Updegraff, Los Angeles. The gift included also a group of famous medical caricatures. The books date from 1528 to 1939 and include "The Proportion of Human Anatomy," published by Albrecht Dürer in Nuremberg in 1528, and a volume of Celsus' work, also published in 1528 by the Aldine Press. The most recent of the group is "The Surgery of Injury and Plastic Repair" (Dr. Samuel Fomon) 1939.

Santa Monica Hospital Dedicated.—The Santa Monica Hospital was dedicated on January 4 as a unit of the Lutheran Hospital Society of Southern California. This hospital was turned over to the California Hospital, Los Angeles, operated by the society, early in January 1941, fulfilling the plans of Dr. William S. Mortensen, president and medical superintendent of the Santa Monica Hospital, to convert his corporation into a nonprofit institution for the citizens of Santa Monica. With Dr. Mortensen, Mrs. Hromadka, widow of Dr. August B. Hromadka, arranged the gift as a trust to the Lutheran Hospital Society, and the recent ceremonies dedicated the hospital as a memorial to the two physicians.

COLORADO

Society News.—The Pueblo County Medical Society was recently addressed by Drs. Harold T. Low and Harry E. Coakley, Pueblo, on "Congenital Intravesical Obstruction in Male Children." —Dr. Roy P. Forbes, Denver, discussed "Frequent Mistakes in Diagnosis" before the Weld County Medical Society in Greeley recently.

The Sewall Lecture.—Dr. Maurice C. Pincoffs, professor of medicine, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, delivered the Henry Sewall Memorial Lecture, February 3, in the Denison Memorial Auditorium, Denver, during the annual meeting of the Medical Society of the City and County of Denver. His subject was "Epidural Abscess."

ILLINOIS

Newspaper Cooperates in Mental Hygiene Project.—The state department of public welfare and the Waukegan *News-Sun* are cooperating in an experimental program, which opened on January 13, to determine the public's reaction to education in mental hygiene and allied subjects. Once a week a group of speakers is provided by the state department of public welfare at no charge to the community; the *News-Sun* arranges for the use of a local theater, and the lectures are designed to educate the public in the prevention of mental disease. A question and answer period concludes each session. The program, offered under the name of the Human Relations Institute, has the approval of the Lake County Medical Society. More than eighteen hundred persons attended the last session in January.

Chicago

Drs. Heyd and Ivy to Address Medical Society.—Dr. Charles Gordon Heyd, New York, formerly President of the American Medical Association, will address the Chicago Medical Society, at the Chicago Woman's Club, February 18, on "A Consideration of the Hepatorenal Syndrome" and Dr. Andrew C. Ivy, Nathan Smith Davis professor of physiology, Northwestern University Medical School, "Rationale of Bile Salt Therapy."

Annual Meeting of Heart Association.—The Chicago Heart Association will hold its annual meeting at the Chicago Woman's Club, February 16, with Dr. Sidney Strauss presiding. Other speakers on the program will be Mayor Edward J. Kelly and Dr. Morris Fishbein, Editor of *THE JOURNAL*. Brig. Gen. Lewis B. Hershey, director of the Selective Service System, Washington, D. C., will also speak on "The Medical Profession and Total War."

Physician Must Serve Sentence on Lottery Charge.—The Chicago *Sun* reported that Dr. Frank Deacon, physician at a CCC camp in East Tawas, Mich., must serve a sentence of a year and a day in a federal penitentiary, according to the verdict, December 23, of the First United States Circuit Court of Appeals in Boston. This verdict upheld Dr. Deacon's conviction in the United States District Court in Boston in June 1940, when he was found guilty of charges of conspiracy to transport lottery tickets interstate and cause them to be taken into Massachusetts, it was stated. Evidence showed that a million tickets, to sell at 50 cents each, had been printed monthly and that four prizes of \$20,000 each were offered to the winners. The tickets were issued as "Will Rogers Memorial Hospital Charity Bonds." Dr. Deacon was said to be one of a group of twelve men and two women involved in the lottery ring which had been using the now defunct Will Rogers Memorial Hospital, 6970 North Clark Street, as a basis for their scheme. Altogether seventy-one men and three women were indicted by a federal grand jury. The physician was the only one who elected to stand trial. It was reported that the others pleaded guilty. Dr. Deacon once owned the Jackson Park Hospital. He graduated at the College of Physicians and Surgeons of Chicago in 1904 and was licensed to practice in Illinois the same year.

MICHIGAN

Pharmacist Honored.—The Michigan Branch of the American Pharmaceutical Association gave a banquet in honor of Leonard A. Seltzer, Sc.D., December 29, in Detroit. Dr. Seltzer is an associate member of the Wayne County Medical Society. Guest speakers at the dinner included Dr. Clarence E. Simpson, president of the county medical society, and E. Fullerton Cook, Pharm.M., of the Philadelphia College of Pharmacy and Science.

Professional Liaison Committee.—A Professional Liaison Committee representing the dental, pharmaceutical and medical professions, authorized by the 1941 house of delegates of the Michigan State Medical Society, has been formed as follows: representing the state dental society, C. H. Jamieson, D.D.S., Detroit; Harry F. Parks, D.D.S., Jackson, and F. D. Ostrander, D.D.S., Ann Arbor; representing the Michigan State Pharmaceutical Association, Jack H. Webster, Detroit; Bernard A. Bialk, Detroit, and C. B. Campbell, Jackson; representing the state medical society, Drs. Allan W. McDonald, Detroit; Harrison S. Collisi, Grand Rapids, and Fred R. Reed, Three Rivers.

MINNESOTA

The Bell Lecture.—William H. Feldman, D.V.M., Rochester, delivered the annual John W. Bell Lecture before the Hennepin County Medical Society, Minneapolis, February 2. His subject was "Chemotherapy of Experimental Tuberculosis."

Chemist Honored.—Ross Aiken Gortner, Ph.D., chief in the division of biochemistry, University of Minnesota, St. Paul, has been announced as the 1942 recipient of the Osborne Medal, presented by the American Association of Cereal Chemists to scientists who have rendered distinguished service in conducting research and training students in cereal chemistry. The medal will be presented at the annual meeting of the association next May. Dr. Gortner has been chief in the division of agricultural biochemistry at Minnesota since 1917, during which time he has trained many students who hold positions of leadership in research. He received his Ph.D. at Columbia University, New York, in 1909, joined the faculty at Minnesota in 1914 and was made full professor and division chief in 1917.

Society News.—Dr. George T. Pack, New York, addressed the Minneapolis Surgical Society in Minneapolis, February 5, on "Cancer of the Stomach."—Dr. Ralph M. Waters, professor of anesthesia, University of Wisconsin Medical School, Madison, delivered a Mayo Foundation lecture, January 22, on "The Evolution of Anesthesia."—Dr. Joseph F. Borg, St. Paul, gave the presidential address before the annual meeting of the Ramsey County Medical Society in St. Paul, January 26, on "Prognosis in Heart Disease: Contributions of the Electrocardiogram."—The Minnesota Pathological Society was addressed in Minneapolis, January 20, by Drs. Philip Halllock and Gerald T. Evans on "Orthostatic Hypotension" and George N. Aagaard Jr., "Transfusion Reactions Due to Rh Factor." All are from Minneapolis.

NEW JERSEY

Portrait of Dr. Haussling.—A portrait of the late Dr. Francis Reynolds Haussling, Newark, was unveiled in the board of trustees room of the Newark Memorial Hospital on Dec. 18, 1941. The picture was the gift of Mr. and Mrs. Jacob L. Newman. Dr. Haussling was at one time president of the Essex County Medical Society and of the Medical Society of New Jersey. At the time of his death, Aug. 4, 1941, he was an attending surgeon at the Newark Memorial Hospital.

NEW YORK

Course in General Medicine.—The state medical society will conduct the following course in general medicine before the Columbia County Medical Society at the Hudson City Hospital, Hudson. The lecturers, all of New York, will be:

- Dr. David D. Moore, Diabetes Mellitus, March 12.
- Dr. James L. Miller, Syphilis, March 26.
- Dr. Paul Reznikoff, The Diagnosis and Treatment of Anemia, April 9.
- Dr. William Goldring, Hypertension and Hypertensive Heart Disease, April 23.
- Dr. Albert Vander Veer, Asthma, May 7.
- Dr. Homer F. Swift, Rheumatic Fever, May 21.
- Dr. John D. Lytle, Nephritis, June 4.

Warning on Theft of Narcotics.—The New York State Department of Health, Albany, announces that additional precautions should be taken by hospital and institution authorities in the protection of stocks of legitimate narcotics in an effort to prevent further robberies committed by addicts and illegal dealers in drugs. The department announces that one man has been arrested who had in his possession two bottles containing two thousand tablets of a narcotic drug. An investigation revealed that these tablets and another bottle of one thousand tablets had been stolen from a hospital in the upstate area.

New York City

The Harvey Lecture.—Roger Adams, Ph.D., professor of organic chemistry and head of the department of chemistry, University of Illinois, Urbana, Ill., will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, February 19. His subject will be "Marihuana."

Ninety Years of Hospital Service.—With the appointment of a special committee, Mount Sinai Hospital announces a program to observe its completion of ninety years of service. It has planned to sponsor a series of lectures during the year to commemorate the event. Prof. Winifred C. Cullis, in charge of the women's section of the British Library of Information, New York, delivered the first lecture in one series, January 28, on "What British Women Are Doing in the War." A group of lectures will be given on blood chemistry. The speakers will include:

- Dr. Donald D. Van Slyke, Acid Base Balance, February 20.
- Dr. John P. Peters, New Haven, Conn., Serum Proteins in Health and Disease, March 6.
- Dr. Fuller Albright, Boston, Phosphate Metabolism in Dysparathyroidism: Renal Insufficiency, Rickets and Osteomalacia, March 10.
- Dr. Henry L. Jaffe and Aaron Bodansky, Ph.D., Serum Calcium: Clinical and Biochemical Considerations, March 13.
- Dr. Reuben Ottenberg, Blood in Jaundice, April 21.
- Warren M. Speery, Ph.D., The Biochemistry of the Lipoidoses, April 28.

This hospital has always been conducted on a nonsectarian basis. It assumed its present name in 1866, moved to its present location at One Hundredth Street east of Fifth Avenue in 1904 and now occupies eighteen buildings covering about three city blocks and has a capacity of about eight hundred and fifty-six beds.

NORTH CAROLINA

Graduate Courses.—The school of medicine and the extension division of the University of North Carolina, in cooperation with local county medical societies, have arranged for a series of postgraduate courses at Fayetteville, Durham, Raleigh and Kinston. Dr. Marvin P. Rucker, Richmond, Va., opened

the course at Durham, January 14, with a discussion on obstetrics, and Drs. Francis C. Wood and Baldwin H. E. W. Lucke, Philadelphia, conducted a clinical-pathologic conference on January 21. Other speakers in the series include:

- Dr. William D. Stroud, Philadelphia, The Failing Heart of Middle Life, January 28.
- Dr. Harrison F. Flippin, Philadelphia, Use of Sulfonamides in General Practice, February 4.
- Dr. Richard B. Cattell, Boston, Surgery, February 11.
- Dr. Charles F. McKhann, Ann Arbor, Mich., Pediatrics—Advances in the Treatment of Infectious Diseases in Children, February 18.

The course at Fayetteville opened, January 22, with Dr. Walter C. Alvarez, Rochester, Minn., speaking on "Diagnosis and Treatment of Common Diseases of the Gastrointestinal Tract." The rest of the course includes:

- Dr. Stroud, The Failing Heart of Middle Life, January 29.
- Dr. James E. Paullin, Atlanta, Ga., Endocrinology and Metabolism in General Practice, February 5.
- Dr. Custis Lee Hall, Washington, D. C., Orthopedic Problems of the General Practitioner, February 12.
- Dr. McKhann, Advances in the Treatment of Infectious Diseases in Children, February 19.
- Dr. Percy S. Pelouze, Philadelphia, Infectious Diseases of the Genitourinary Tract, February 26.

OHIO

The Hanna Lecture at Western Reserve.—Dr. Eduardo Braun-Menéndez, lecturer in physiology and director of cardiovascular investigations, Faculty of Medical Sciences, University of Buenos Aires, will deliver the forty-seventh Hanna Lecture at the Western Reserve University School of Medicine, Cleveland, February 18. His subject will be "The Humoral Mechanism of Renal Hypertension."

PENNSYLVANIA

Society News.—A symposium on "Medical Aspects of Civilian Defense" was presented by Drs. Howard K. Petry, William Paul Dodds and Samuel B. Fluke, all of Harrisburg, at a recent meeting of the Dauphin County Medical Society in Harrisburg on February 3.—Dr. Thomas Peck Sprunt, Baltimore, will address the Harrisburg Academy of Medicine on "Diseases of the Liver," February 17.—At a meeting of the Washington County Medical Society in Washington, February 1, Dr. John O. Rankin, Wheeling, W. Va., spoke on "Preoperative and Postoperative Care of the Surgical Patient."

Philadelphia

Postgraduate Lectures.—A series of postgraduate lectures was presented in Philadelphia, February 2-5, under the auspices of the American College of Physicians. The speakers included:

- Dr. George Morris Piersol, Medical Emergencies.
- Dr. Hobart A. Reimann, Prophylaxis and Treatment of Virus Diseases.
- Dr. Charles L. Brown, Fatigue.
- Dr. George Harlan Wells, Borderline Metabolic Deficiencies.
- Dr. William D. Stroud, Effort Syndrome.
- Dr. Francis C. Wood, Criteria of Organic Heart Disease in Recruits.
- Dr. Thomas M. McMillan, Forms of Cardiac Derangement.
- Dr. John M. Bachulus, Lieutenant commander, U. S. Navy, Lakeland, N. J., Cardiovascular Problems in Aviation.
- Dr. Edward A. Strecker, Personality Deviations.
- Dr. Earl D. Bond, Early Signs of Psychoses.
- Dr. George Wilson, Traumatic Neuroses.
- Dr. Baldwin L. Keyes, Malingering.
- Dr. Harrison F. Flippin, Pharmacology and Toxicology.
- Dr. John S. Lockwood, Surgical Infections.
- Dr. John A. Kolmer, Medical Infections.
- Dr. Charles A. W. Uhle, Urinary Tract Infections.

On Friday, February 2, the day following the completion of the course, the fourth annual round-up or regional meeting of members of the college from Eastern Pennsylvania, Delaware, and Southern New Jersey was held.

SOUTH CAROLINA

Personal.—Dr. John W. Corbett, Camden, has been chosen the first honorary member of the South Carolina Tuberculosis Association.—Dr. John H. Mathias, Lexington, has been appointed chief of emergency medical service for Lexington County.

Hospital News.—Approval has been given to construction of a fourth story addition to the St. Francis Xavier Infirmary, Charleston, as a defense public works project. A federal grant of \$70,000 will defray part of the expenses. The improvement will make seventy beds available at the hospital.

Society News.—Dr. Julian M. Ruffin, Durham, N. C., discussed "Diagnosis and Treatment of Ulcerative Diseases of the Colon" before the Greenville County Medical Society recently.—The Columbia Medical Society was addressed in Columbia, January 12, by Drs. Charles G. Spivey, Columbia, on "Effect of Pregnancy Urine on Certain Hypopituitary Conditions," and Samuel W. Becker, Chicago, "Allergic Aspects of Dermatology."

TEXAS

Changes in Health Officers.—Dr. Seborn C. Richardson, Bryan, has been named health officer of Bryan.—Dr. Lorence W. Feller, Fredericksburg, has been named health officer of Gillespie County to succeed the late Dr. Joseph E. Peden, Fredericksburg.

Public Health Election.—Dr. Horace E. Duncan, Dallas, health officer of Dallas County, was chosen president-elect of the Texas Public Health Association at its recent annual meeting in Corpus Christi, and Dr. Clarence Burke Brewster, Fort Worth, now on active duty in the medical corps of the U. S. Army, acceded to the presidency. Dr. Harold A. Wood, Austin, director of the Austin-Travis County health unit, and Miss Katherine King Baker, R.N., were chosen vice presidents. Alan C. Love, Austin, sanitary engineer of the Austin-Travis health unit, was reelected secretary-treasurer.

Changes in the Faculty at Texas.—Dr. Jarrett E. Williams, formerly assistant dean, Medical Branch of the University of Texas, Galveston, has been appointed associate dean and general superintendent of the associated hospitals. Dr. William S. Wallace, assistant professor of radiology, has been named assistant dean. A number of new departments have been formed at the medical school, including anesthesiology, biophysics, dentistry and stomatology, which does not deal with the mechanics of dentistry but rather with the broad relationship between medicine and dentistry. Departments of legal and cultural medicine have also been added and one on military medicine, which is oriented with aviation medicine to cover tropical medicine but which is not related to military science and tactics. The department of preventive medicine and public health has initiated a program in tropical medicine and diseases endemic in the Southwest and Old Mexico.

WASHINGTON

Hospital News.—A federal grant of \$476,000 has been given to Bremerton for a new hospital with a capacity of about one hundred and sixty beds.—A new wing will be added to the United States Naval Hospital, Bremerton, at a cost of about \$151,000.

Annual Meeting of Seattle Surgeons.—The Seattle Surgical Society held its annual meeting at King County Hospital, Seattle, January 23-24. In addition to papers by local speakers, the program included symposiums on infection, the use of blood, plasma and fluids, head and neck injuries and gynecologic relaxations. The guest speaker at the meeting was Dr. Frank R. Menne, professor of pathology and head of the department, University of Oregon Medical School, Portland, who participated in the general program and delivered the banquet address on "Lymphosarcoma of Small Intestine with Report of Two Cases Receiving Surgical Intervention."

WISCONSIN

State Health Board Reelected.—At a recent meeting, the state board of health reelected all its 1941 officers. Included are Drs. William W. Kelly, Green Bay, president; Stephen Cabana, Milwaukee, vice president, and Cornelius A. Harper, Madison, secretary and state health officer.

Dr. SeEVERS Goes to Michigan.—Dr. Maurice H. SeEVERS, associate professor of pharmacology, University of Wisconsin Medical School, Madison, has been appointed professor of pharmacology and chairman of the department at the University of Michigan Medical School, Ann Arbor, effective February 1. Dr. SeEVERS graduated at Rush Medical College, Chicago, in 1932.

The First Helmholtz Lecture.—Dr. Anton J. Carlson, Frank P. Hixon distinguished service professor emeritus of physiology, University of Chicago School of Medicine, Chicago, delivered the first annual A. C. Helmholtz Lecture, January 16, under the auspices of the University of Wisconsin Medical Society, Madison. His subject was "Some Unknown Problems in the Physiological Pathology of Aging."

Hospital Association Elects Officers.—The Wisconsin Hospital Association reelected its officers and directors at the January conference in Milwaukee with the exception of Dr. Robin C. Buerki, who in September 1941 became director of hospitals at the University of Pennsylvania and dean of the University of Pennsylvania Graduate School of Medicine, Philadelphia. Dr. Buerki was formerly executive secretary of the University of Wisconsin Medical School and superintendent of the State of Wisconsin General Hospital and the Wisconsin Orthopedic Hospital for Children, Madison. Dr. Harold M. Coon, superintendent of Wisconsin General Hospital, was chosen to replace Dr. Buerki on the association's board of directors. Dr. Edward T. Thompson, medical superintendent, Mount Sinai Hospital, Milwaukee, is secretary-treasurer.

GENERAL

Grants for Research in Poliomyelitis.—The semiannual meeting of the medical committees of the National Foundation for Infantile Paralysis will be held in New York, May 7-8. At this session all grants for research will again be considered. Applications should be filed with the foundation at 120 Broadway, New York, by March 1.

Dates Changed for College of Surgeons Meeting.—Because of the war, the thirty-second annual Clinical Congress of the American College of Surgeons will be held in Chicago, October 19-23, instead of in Los Angeles as originally planned. Headquarters will be at the Stevens Hotel. The twenty-fifth annual hospital standardization conference sponsored by the college will be held simultaneously. The programs of both meetings will be based chiefly on wartime activities as they affect surgeons and hospital personnel in military and civilian service.

Contest on Safety.—The American Museum of Safety announces a contest in an effort to strengthen the country's accident prevention program and perhaps obtain new ideas that will help promote safety and conserve man power for U. S. defense activities. Entries must reach the American Museum of Safety, Room 733, 60 East Forty-Second Street, New York, before midnight February 28. The subject for the contest is "A Plan of Action to Combat the Rising Tide of Accidents in the Present Emergency." Dr. Donald B. Armstrong, New York, is president of the American Museum of Safety and chairman of the Seamen Award Committee, which sponsors the contest.

Holiday Accidents.—According to a survey by the Associated Press, a total of two hundred and sixty-five persons died over the New Year's holiday in automobile accidents, drownings, falls, shootings and by other violent means. Automobile accidents accounted for one hundred and seventy-one of the total. A similar survey showed a national total of four hundred and thirty-one for the Christmas holiday, of which three hundred and thirty-four deaths were in traffic. Ohio recorded the largest New Year's state total of twenty-six deaths, twenty-two of which were in traffic accidents. Illinois' total was twenty-four and New York's twenty-one.

Annual Report of Plotz Foundation.—The Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation in its eighteenth annual report covering 1941 announced that sixty-seven applications for grants were received by the trustees, forty-nine of which came from seven different countries in Europe, South America and Central America. In the year just ended thirty-five grants were approved, one of these being a continued annual grant. In its eighteen years the foundation has made four hundred and twenty-nine grants, which have been distributed to investigators in Arabia, Argentina, Austria, Belgium, Brazil, Canada, Chile, China, Czechoslovakia, Denmark, Egypt, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, India, Iraq, Italy, Latvia, Lebanon, the Netherlands, North Africa, Norway, Palestine, Peru, Poland, Portugal, Rumania, South Africa, Sweden, Switzerland, Syria, Venezuela, Yugoslavia and the United States. The grants have assisted specific studies in a broad range of medical research.

Syphilis Test Required of Employees.—A recently completed survey shows that more than half of the largest industrial plants in the country are including a routine blood test for syphilis in employee physical examinations, according to the American Social Hygiene Association. More than two hundred large plants in forty-three states answered questionnaires sent out by the association. These plants represent many types of industry and have at least one thousand employees. Two thirds of the companies requiring these tests maintain the policy of accepting infected applicants if they are not infectious, are not disabled and will take treatment. The association states that this policy is even more liberally interpreted for infected workers already employed, three fourths of the companies retaining their employees with the usual provision that they are not to work while infectious and must take adequate treatment. The association believes this a major public health contribution because such measures insure employee confidence and aid case holding by assuring workers that they will not lose their jobs provided they take treatment.

Handicapped Employees Useful.—A study of the experience of sixty-eight industrial companies with handicapped employees reveals that careful selection procedures and placement have been uniformly favorable. According to the Conference Board, New York, nearly one third of these companies employ illiterates, while one fourth employ ex-convicts and workers with physical defects. One company reported that it

had about eighteen thousand physically defective persons on the payroll. Another said that persons who have defective hearing are often superior for inspection work. The survey showed that among employers the principal obstacles to the employment of ex-convicts are the belief that most ex-convicts do not desire to rehabilitate themselves, the practice of hiring only those persons who can be promoted to positions of responsibility, the belief that ex-convicts cannot qualify and the fear that ex-convicts would be objectionable to fellow employees. The survey was designed to show that the estimated 6,000,000 adults in the United States who are handicapped by lack of education, physical defects or criminal records may with careful planning be put to gainful employment.

Physicians Swindled.—A physician in California writes that a man has been calling on physicians in California using the approach that he has a "pain around the heart" and after the visit is concluded he presents a check for more than the amount of service. The man has a mitral murmur, and the unsuspecting physician is apt to make an examination and prescribe some sort of treatment. The man has used the name John Larabee, 2021 Hearst Street, Berkeley, Calif. There is no such address. He states he is 52 years old and a radio operator. The California physician sends the following description: He is 5 feet 10½ inches tall and weighs 152 pounds; his chest measurements are 34 to 39 inches; waist, 32½ inches; patellar reflexes are exaggerated; pupil reflexes, normal; pulse 100, temperature 98, blood pressure 150/80; heart position normal, mitral systolic murmur transmitted to the anterior maxillary line; lungs normal; extremities normal. He has impacted cerumen in both ears and has pyorrhea of all his teeth. In some cases the checks have been made out to J. Larabee and signed "Howard E. Bliss." Across the face of the check is written "Compilation" with some number after it like 18 or 200; in the corner of the check it is marked "Wages." The checks are all numbered 172, irrespective of the bank they are on.

LATIN AMERICA

Personal.—Dr. Luther Vargas, eldest son of President Getulio Vargas of Brazil and chief surgeon of the orthopedic section of Centro Medico Pedagogico Oswaldo Cruz, Rio de Janeiro, has arrived in New York, where he will start a six months study tour of orthopedic clinics in the United States, the *New York Times* reported February 3.

Congress of Tuberculosis.—The sixth Pan American Congress of Tuberculosis will be held in Havana, Cuba, in October 1943. Officers include Drs. Juan J. Castillo, Havana, and Héctor Madariaga, Havana, president and secretary, respectively. Drs. G. Aráoz Alfaro, Buenos Aires, Argentina, Clemente Ferreira, São Paulo, Brazil, and John B. Morelli, Montevideo, Uruguay, have been named honorary presidents.

Institute of Hygiene in Ecuador.—A National Institute of Hygiene has been created at Guayaquil, Ecuador; it will be housed in a new building already under construction. The International Health Division of the Rockefeller Foundation, New York, and the government of Ecuador are financing the project as well as sharing the maintenance for a five year period, after which time it is expected that the Ecuadorian government will assume complete responsibility. There will be installed in the new building the laboratories of bacteriology, chemistry, medical researches, preparation of anti-smallpox vaccine, bacterial vaccines, anatoxins, BCG laboratory, special laboratories for epidemics and yellow fever and the like, and in future the preparation of therapeutic serums. It is also planned to have departments for general services to the public.

CORRECTION

Stipends for Young South American Graduates.—In the Buenos Aires letter in *THE JOURNAL*, Nov. 29, 1941, page 1906, the correspondent stated that the Pan American Sanitary Bureau, cooperating with the Rockefeller Foundation, had provided thirty-five stipends to enable young South American graduates to be trained in hospitals in the United States and that seven of these were to be "distributed by Prof. B. A. Houssay." To clarify his participation in this matter, Professor Houssay writes as follows:

The Pan American Sanitary Bureau, in connection with the coordinator of Cultural and Commercial Relations between the American Republics, has provided thirty-five stipends to be distributed in South America, seven of which were planned for Argentina to enable young graduates to be trained in the best hospital service of the United States.

Dr. Felix R. Brunot, representative of the Pan American Sanitary Bureau, visited Buenos Aires and received the applica-

tions of seventeen candidates, which were sent to the United States, where selections should be made.

Designations came from Washington and seven applicants of our country were appointed: Drs. Pedro O. Bolo, Raul Alcayaga, Luis Delfor Podesta, Emilio Araya and Jose Abel Landa from Buenos Aires, and Drs. Mario Besso Pianetto and Alfredo F. J. Cesanelli, from Rosario.

The participation of Prof. B. A. Houssay in this matter was limited, namely, to receive applications and deliver them to Dr. Brunot, on his request. He had no intervention at all in the selection of the candidates.

Government Services

Federal Grants to Assist Hospital Expansion

Announcement is made of a series of Defense Public Works projects which have been approved under the Lanham Community Facilities Act. One unit will be constructed in Charleston, S. C., at an estimated cost of \$675,000 with the capacity of one hundred and forty beds. A one story health center building will be erected in Hattiesburg, Miss., at an estimated cost of \$22,000. The new unit will house the Forrest County Health Department. The Warren A. Candler Hospital, Savannah, Ga., will add a new twenty-five bed addition with equipment. The estimated cost is \$93,398. A one story health center building will be erected in Starke, Fla., at an estimated cost of \$33,000. These projects have been approved to expand local facilities, which have been found inadequate with the increased defense activities.

New Commission to Study Vital Statistics

A national commission on vital records has been created as a special committee of the Health and Medical Committee of the Office of Defense Health and Welfare Services. The new commission was formed at the request of the Association of State Health Executives and the American Association of Registration Executives. Lowell J. Reed, Ph.D., professor of biostatistics and dean of the Johns Hopkins University School of Hygiene and Public Health, Baltimore, has been appointed chairman. The Health and Medical Committee decided to create the commission after representatives of the army, state registrars, state health officers, the Bureau of the Census and the U. S. Public Health Service had "described the difficulties encountered by state offices in trying to maintain efficient service to the public in the face of an overwhelming increase in demands for proof of citizenship." First attention of the new committee will be given to the problem of delayed registration of births.

Major Armstrong Awarded Medal

Major Harry G. Armstrong, U. S. Army Medical Corps, in charge of research at the School of Aviation Medicine, Randolph Field, Texas, has been named to receive the John Jeffries Award given by the Institute of the Aeronautical Sciences for his contributions to the health and efficiency of military and civil aircraft pilots. The award is named after John Jeffries, a Boston physician, who was the first American to make scientific observations from the air. Major Armstrong graduated at the University of Louisville School of Medicine in 1925. He graduated at the Army Medical School, the Army Medical Field Service School and the Army School of Aviation Medicine. According to an announcement, he established the Aero Medical Research Laboratory of the Army Air Corps at Wright Field, Dayton, Ohio, in 1934, serving as director until his assignment to Randolph Field. He was one of the first to describe accurately some specific medical results of flying, such as aeronurosis, a kind of mental and physical fatigue experienced by fliers under certain conditions; aero-otitis, an effect of high altitude and acrobatic flying on the human middle ear, and aeroembolism, a reaction similar to the "bends" suffered by deep sea divers, which affects pilots who climb to high altitudes too rapidly and without proper safeguards. Major Armstrong has done much to stimulate further research in the medical aspects of aviation and has led to the development of oxygen supply and pressurizing apparatus and other precautionary procedures for safeguarding pilots against the physical effects of military flying. His volume on "Principles and Practice of Aviation Medicine" is the most complete textbook yet published on the subject.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 27, 1941.

Wartime Prescribing: The National War Formulary

All the normal activities of the country have to be subordinated to the war effort. In previous letters, changes with regard to drugs, such as extending the cultivation of medicinal herbs, formerly largely imported (*THE JOURNAL*, Sept. 13, 1941, p. 948), have been announced. The whole problem of drugs has been systematically dealt with by a committee appointed by the minister of health, which has compiled the National War Formulary. For prescribing under the national health insurance act this replaces the previous national formulary. Since the 1st of December it has not been considered advisable to prescribe any preparation by title only unless its formula is contained in the National War Formulary, the British Pharmacopoeia or the British Pharmaceutical Code. Under the heading of "Wartime Prescribing" the new Formulary describes, in the interests of economy, some general limitations. Agar should be reserved for bacteriologic use. The prescribing of cinchona as a bitter is discouraged; quinine should be reserved for the treatment of malaria. Digitalis is best administered in one-half and 1 grain tablets of the powdered leaf. The liquid extract of ergot is not an economical preparation; the drug is best administered in tablet form. The vitaminized oil of the British Pharmacopoeia has the same vitamin content as cod liver oil and in most cases is a satisfactory alternative. Economy in alcohol is essential; alternatives are suggested for preserving surgical instruments from rust and for surgical and industrial methylated spirit used to prevent bedsores. Liquid petrolatum must be prescribed with regard for economy; when oral administration is considered necessary a 25 per cent emulsion should be used, and even this sparingly. Under a defense regulation liver extracts are controlled; they must be administered only in pernicious or other megalocytic anemia and then only by injection. Malt extract and preparations containing it should be prescribed only for children and tuberculous patients. Phosphorus is wanted for munitions. Therefore phosphoric acid has been replaced by hydrochloric acid, hypophosphites and glycerophosphates have been excluded, and sodium acid phosphate remains for use only in association with methenamine. Potassium salts should be prescribed only when the corresponding sodium salts are not satisfactory. As this holds in the case of potassium chlorate and acetate, they have been retained.

Prescribers are asked not to order confections and lozenges, which require sugar. Dextrose is rarely necessary except for intravenous and rectal administration. Sulfanilamide, sulfapyridine and sulfathiazole are included in the new formulary, but sulfanilamide is declared to be the most generally useful and should be prescribed unless there are specific indications for either of the others. Economy is enjoined in the use of salicylic acid, salicylates, mercury and its compounds, scopolamine and atropine. The use of distilled water should be restricted to applications for the eye and those which, in the opinion of the pharmacist, would be undesirably altered if ordinary potable water should be used. Proprietary preparations of foreign origin should be avoided; in any case many of them are unobtainable.

One difference in the new formulary is reduction of glycerin in the making of preparations. Certain capsules, such as those of ergot, oil of santal and preparations of iron, are omitted. Tablets and pills are declared to be generally preferable to capsules. But capsules of vitamins A and D and of halibut liver oil have been added. Four flavoring and sweetening emulsions—*aniseed*, *aniseed with peppermint*, *chloroform* and *peppermint*

alone—replace alcoholic preparations. For intrauterine use a solution containing 25 per cent of glycerin and 10 per cent of sodium chloride is introduced in place of pure glycerin.

In the mixtures quassia replaces gentian, and sodium sulfate replaces magnesium sulfate. Alcohol is reduced everywhere and glycerin is excluded; hydrochloric acid replaces phosphoric acid; extract of licorice for sweetening is removed or reduced. Bismuth mixture is entirely discouraged, and mixtures containing magnesium trisilicate and carbonate or kaolin replace it.

It should be noted that what is laid down in the National War Formulary is advisory, not compulsory. The physician can still order what he thinks best for his patient, but he is subject to the limitation that certain drugs and preparations are no longer obtainable. Further, the panel physician, prescribing under the national insurance act, has had his formulary altered. If not satisfied with a prescription in the new formulary, he can prescribe according to the old one, but instead of a ready made formula he will have the inconvenience of writing the prescription in full.

International Hospital Collaboration

The king of Norway, the grand duchess of Luxemburg, Dr. Běněš, lately president of Czechoslovakia, the prime minister of the Netherlands, the Belgian ambassador, the ministers of Norway, Venezuela and Colombia, representatives of Poland, Yugoslavia, Greece, Palestine, Iraq, Egypt, Abyssinia, India and China and the British minister of health were present at a conference held in London to consider the position of hospitals the world over when peace comes. The conference was summoned by the United Kingdom Council of the International Hospital Association. Prof. A. T. Jurasz, dean of the Polish Faculty of Medicine in the University of Edinburgh, opened a debate on the collaboration which must follow the war among all nations prepared to work together on a basis of honesty and friendliness. Some nations would have to amend the condition of their minds before they could be accepted. He suggested a greater exchange of personnel, both lay and medical, a six months residence in the larger hospitals for graduates of different countries on a principle of international exchange, an interchange of specialists and an extension of postgraduate teaching. Professor Loewy of Czechoslovakia suggested a "health union" among European countries on the basis of the curative resources of each country, such as mountain sunshine or medicinal springs, and the distribution of patients without regard to national boundaries. Dr. E. J. Bigwood, chairman of the Belgian commission for the study of postwar conditions, stated that governments of the allied countries now in London had already considered a plan for immediate relief after the war and for long term development.

HOSPITALS IN ENGLISH SPEAKING COUNTRIES

Mr. McAdam Eccles (surgeon), chairman of the United Kingdom Council, who presided, opened a discussion on the special needs of English speaking countries. He suggested that the total number of beds required in any area and the expected number of outpatients should be computed and the annual cost calculated and announced to the local community, who, he did not doubt, would provide it voluntarily. Mr. H. S. Souttar (surgeon) referred to the sweeping away of the divisions between voluntary (supported by voluntary subscriptions) and municipal hospitals. Mr. Ernest Brown, minister of health, mentioned the close relation between Britain and the United States in connection with the Emergency Hospital Service (established for the care of civilians injured in the war). The United States not only had given material help but had lent medical and nursing personnel. The Emergency Hospital Service had assumed a shape which had made possible adaptation to war needs of all kinds of existing hospitals and services.

Medical War Relief

In September 1940 a medical war relief fund was established to give temporary assistance to British physicians and their dependents who were in financial straits as a result of war conditions. An appeal for funds was made to British physicians and medical organizations with the result that \$170,000 was raised in the first year. In addition to this sum \$22,500 has been received from the British Medical Association of Australia, \$1,500 from the Malaya branch of the association and \$1,750 from British Columbia. The fund has to provide not only for cases arising out of regular warfare but also for those arising from the indiscriminate attacks from the air, on our cities and towns.

A report of the first year's work of the fund shows the kind of tragedies in which physicians and their families have been involved. In 5 cases the beneficiaries of the fund are dependents of physicians killed on active service with our forces. An equal number of awards have been made in cases of four physicians killed and one disabled while engaged in civil defense duties or ordinary civil practice. Sixteen physicians helped were in difficulties resulting from the bombing of their homes or offices, with destruction or damage to their cars, furniture, instruments or other possessions. In 7 cases assistance was given to physicians temporarily in difficulty owing to loss of patients through evacuation and in 8 cases to physicians in financial straits caused by reduction in income as a result of joining the fighting services or who required help in reestablishing themselves in their practices after relinquishing their commissions on grounds of ill health. Grants to widows and other dependents of physicians have always taken the form of gifts, and in many other cases this seemed to be the only appropriate form of help. Those whose difficulties seemed likely to be only temporary requested and received loans.

The distribution committee has worked in cooperation with the Royal Medical Benevolent Fund, which was established a century ago for the relief of distressed physicians and their widows and orphans, for whom it provides annuities in the more urgent cases when the applicant is above the age of 60. This fund, with its long experience, has proved most helpful to the War Relief Fund. When widows with young children have been voted sums toward educational expenses over a period of years the Benevolent Fund, so experienced in such matters, has undertaken the administration with discretion to vary the instalments.

The British Journal of Surgery

Professor Hey Groves has resigned the position of editor of the *British Journal of Surgery*, which he has occupied for twenty-eight years, since the foundation of this periodical. A period of ill health, aggravated by enemy action, is his reason for relinquishing a task performed with high ability. He was one of the founders of the *Journal* and has shown himself a great editor of a journal which worthily represents British surgery all over the world. The project of founding the *Journal* originated in Bristol, the home of Hey Groves. The support of the leading British surgeons was secured, and Moynihan was the first chairman of the editorial committee. Hey Groves is succeeded by C. P. G. Wakeley, surgeon to King's College Hospital.

Anglo-Soviet Medical Relations

An Anglo-Soviet Medical Committee consisting of members of the medical and dental professions and students of these professions, as associate members, has been formed in England with the following objects: 1. To form a liaison between the medical professions of the two countries. 2. To exchange the latest clinical and scientific knowledge. 3. To facilitate visits of medical specialists between the two countries. 4. To give specialist advice on medical aid to the Soviet Union. The mini-

mum subscription for associate members will be \$125. A bulletin will be published from time to time giving reports of the committee's work. The president of the committee is Sir Alfred Webb-Johnson, president of the Royal College of Surgeons.

RIO DE JANEIRO

(From Our Regular Correspondent)

Jan. 5, 1942.

Demographic Census

The last census of Brazil demonstrated that on Sept. 1, 1940 Rio de Janeiro had 1,781,567 inhabitants. The statistics showed a decrease in births in that city. While in the 1921-1930 period the births were 344,921, in the 1931-1940 period only 321,976 births were registered, although there was an increase in the population. The deaths were 248,964 in the first period and 274,223 in the 1931-1940 period. This increase is not in proportion to the growth of the population, showing that there are better conditions of health. In the same periods the marriages numbered 80,545 and 106,112 respectively. These figures demonstrated the tendency of decrease in birth rate, although there

The Most Largely Populated Cities in Brazil

	No. of Inhabitants
Rio de Janeiro	1,781,567
São Paulo	1,308,000
Recife	348,472
Salvador (Baía)	291,000
Porto Alegre	275,739
Belo Horizonte	211,650
Belem (Pará)	208,706
Fortaleza	174,855
Santos	170,000
Niterói	143,004
Curitiba	142,855

has been an increase in the number of marriages. The last demographic census indicated that the most largely populated Brazilian cities are these shown in the table. The population of the capitals of the states was 5,661,091 in 1940, or 13.6 per cent of the population of the whole country. In 1920 this figure was only 2,473,689, or 8.6 per cent of the whole nation. This shows that the people, on the whole, prefer city life to country life.

Brazilian Congress of Surgery

The third Brazilian Congress of Surgery was held at Rio de Janeiro on Nov. 16-22, 1941. Many surgeons came from Argentina, Paraguay, Chile, Uruguay and several Brazilian states. The official papers were read by Profs. Julio Diez of Buenos Aires, Jayme Poggi of Rio de Janeiro and Ottobri Costa of São Paulo on the subject of surgical treatment of pain. Papers were read also by Profs. Manuel Riveros of Asunción, Mota Maia of Rio de Janeiro and Alípio Correia Netto of São Paulo on burns. Profs. Barbosa Vianna of Rio de Janeiro and Edmundo Vasconcellos of São Paulo read papers on amputations from the functional point of view. Many other papers were read before the congress by Brazilian surgeons.

Dr. Raymundo Pires de Albuquerque proposed a new technic for temporary ligation of the appendical stump. Drs. Ney Penteado de Castro and Eurico Branco Riberio were able to show the good results obtained with the alcoholization of the hypogastric plexus as a substitute for the Cotte operation. Dr. Jassy Teixeira advocated extradural anesthesia in thoracic surgery. The problems of hyperthyroidism in pregnant women were discussed by Dr. Mariano de Andrade. Dr. Henrique Smidt spoke about the painless postoperative period, obtained by alcoholization of the mesoappendix.

PARIS

(From Our Regular Correspondent)

Dec. 31, 1941.

The New Law Against Alcoholism

A new law against alcoholism published in the *Journal officiel* of October 8 has been passed in order to lessen the drinking of apéritifs made of distilled alcohol and essences. These apéritifs are being drunk in great quantities especially in the north of France, as against the south of France, where wines predominate.

The toxicity of industrial alcohols has been proved in various experiments by Joffroy, Servaux and Picaud, who set up a table showing an increasing toxicity in the following order: ethyl alcohol, propyl alcohol, butyl alcohol, amyl alcohol. Supposing the height of toxicity to be, for instance, 1 for ethyl alcohol (wine alcohol), it amounts to 3 for butyl alcohol and to 10 for amyl alcohol.

The new law took the place of the one of Aug. 23, 1940, which restricted in France the sale of all apéritifs made of industrial alcohol. Not authorized are apéritifs made of wine containing more than 18 per cent of alcohol or more than $\frac{1}{2}$ grain of an authorized essence in 1 liter. Even the so-called digestifs containing more than $\frac{1}{2}$ grain of essence in 1 liter are forbidden. The board of health can interdict drinks that are considered noxious. The selling of all drinks except wine to persons under age is not allowed. All drinks except wine are to be had only on three days a week. Beverages considered authorized apéritifs and digestifs can be taken on those days only at limited hours. An exception is granted for grog, allowed to be sold from November 1 to April 1 every day at fixed hours. All publicity of apéritifs is forbidden as well as the advertisement of their supposed medical qualities.

The law does not admit the opening of new bars selling apéritifs. But even other bars selling wine or liquors can be admitted only if the authorized quota of one bar for four hundred and fifty inhabitants has not been exceeded. The alcohol problem is economic as well as medical. The alcohol problem is connected with the alimentary difficulties France is suffering nowadays. Intensive discussions are going on in the medical reviews and at the meetings of medical societies. There are physicians requesting the interdiction of all alcohol, even wine, but the latter are in the minority.

Professor Mouriquand, the vitamin specialist, discussed the toxic effect of an excess of wine in a remarkable lecture before the Medical Society of Hospitals in Lyons (Société médicale des hôpitaux de Lyon). The intoxication due to alcohol, as apéritifs and liqueurs, affects especially the assimilation of vitamins soluble in water (vitamin B₂ and vitamin C). Excess of wine, which has also a toxic effect, causes after some time a cirrhosis disturbing the assimilation of the oil soluble vitamins A, K and E, but this disturbance of the liver function can also hinder the assimilation of the other vitamins (B₁ and B₂). Our actual deficiency of vitamins in food requires the suppression of all agents disturbing the assimilation of vitamins.

Some time ago the review *Concours médical* summarized the principal requests of French physicians in the following way: (1) to diminish the number of bars, (2) to regulate the selling of wine by means of an individual ration card (0.5 liter for a person, 1 liter for workmen), (3) to allow the observation and hospitalization of drunkards. The Academy of Medicine has proposed similar requests recently.

Typhoparatyphoid, Diphtheritic and Tetanus Vaccine

At a meeting of the Academy of Medicine, Professor Ramon, scientific director of the Pasteur Institute in Paris, reported a new formula for the associated typhoparatyphoid, diphtheritic and tetanus vaccine. The advantage of the new vaccine is that

it causes fewer severe reactions. Two modifications have been introduced. First, formaldehyde has been applied for the preparation of the typhoid and paratyphoid vaccine. Second, the number of typhoid and paratyphoid germs has been diminished. If one heats the combined vaccine to 54 C., the formaldehyde contained in the mixture seems to cause a modifying effect on the typhoid germ.

The number of typhoid and paratyphoid bacilli in 1 cc. of the new vaccine amounts to 0.7 billion Eberth's bacilli, 0.3 billion paratyphoid A, 0.5 billion paratyphoid B and 13 to 14 units each of the two anatoxins; before it amounted to 1,050 billion Eberth's bacilli, 0.7-billion paratyphoid A and 0.7 billion paratyphoid B in 1 cc. By inoculation of the new vaccine, administering in three times in intervals of fifteen days each 1 cc., 2 cc. and 2 cc., 7.5 billion germs and 65-70 units each of tetanus and diphtheria anatoxins are introduced into the body, instead of the old formula of 12 billion of germs and 70-75 units of each anatoxin.

A child used to get in four injections (0.5 cc., 1 cc., 1.5 cc. and 1.5 cc.), altogether 11 billion germs and 60 to 65 units. By means of the new vaccine a child at the age of 3 to 7 years gets in three inoculations (0.5 cc., 1 cc., 1.5 cc.) with intervals of fifteen days each only 4.5 billion bacilli. A child over 7 years gets 7.5 billion, the number of germs a grown up person should get.

Several thousand inoculations of school children have been performed without any noxious sequels. Thousands of young people have also been vaccinated. The local reaction is inconsiderable and the general reaction seldom causes the temperature to rise above 39 C. (102.2 F.). The maximal temperature is reached six to twelve hours after vaccination, and it usually recedes in twenty-four hours.

According to the serologic tests among vaccinated persons the new vaccine has the same immunization qualities as the vaccine formerly used. Inoculation with this vaccine is obligatory for certain groups of the population.

Death of Prof. Francis Rathery

Professor Rathery, who died some months ago at the age of 64, was well known in France through his most remarkable researches on kidney physiology and pathology, realized partly with his master Castaigne. His contributions to the treatment of metabolic diseases such as rheumatism, gout and especially diabetes and to the effect of insulin gained renown in France and all other countries. He displayed profound knowledge of metabolic diseases. In 1936 he lectured on the spa treatment of diabetes at the International Congress of Medical Hydrology, Climatology and Geology at Belgrade. In 1926 he was appointed professor of pathology at the Faculty of Medicine of Paris, succeeding Professor Roger. He became a member of the Academy of Medicine in 1932 and was appointed vice president of the Biologic Society in 1937. He was general secretary and later on president of the Association of Physicians in Paris.

Marriages

DAVID JULIAN SOBIN, Carsonville, Mich., to Miss Florence Markle of Winnipeg, Man., Canada, in Detroit in September 1941.

EMERSON LOUIS MEYER to Miss Addie Marie Grant, both of Healdsburg, Calif., Aug. 31, 1941.

JOHN F. LUBBEN JR., Dallas, Texas, to Miss Virginia Breeding in Houston, Nov. 22, 1941.

LOUIS D. BOSHES to Miss Rhea Amber, both of Chicago, January 4.

FRANK A. CALDERONE to DR. MARY STEICHEN, both of New York, Nov. 26, 1941.

Deaths

Isadore Julius Wolf, Kansas City, Mo., Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria Germany, 1887, at one time lecturer and professor of medicine at the University Medical College, Kansas City, professor emeritus of medicine at the University of Kansas School of Medicine, Kansas City, Kan., member of the Missouri State Medical Association on the staff of the St. Joseph's Hospital, president of the staff of the Menorah Hospital, 1936-1937, consulting physician, Kansas City General Hospital, author of "A Family Doctor's Notebook", 1940 aged 77, died Dec. 17, 1941, of cerebral hemorrhage.

John T. Farrell of West Warwick, R. I., Jefferson Medical College of Philadelphia 1886, an Affiliate Fellow of the American Medical Association, president of the Providence Medical Association, 1913-1914, past president of the New England Roentgen Ray Society, formerly on the staff of St. Joseph's Hospital, Providence, was a member of the consulting staff of the Charles V. Chapin Hospital, Providence, aged 83, died Oct. 13, 1941, of nephritis, uremia and arteriosclerosis.

Arthur Hutchinson Terry, Patchogue, N. Y., College of Physicians and Surgeons, medical department of Columbia College, New York, 1882, member of the Medical Society of the State of New York, past president of the Suffolk County Medical Society, the Associated Physicians of Long Island and the Southside Long Island Clinical Society, formerly member of the board of education, aged 84, died Dec. 26, 1941, of lobar pneumonia.

Michael A. Dailey of Colonel, M. C., U. S. Army, Baltimore, Harvard Medical School, Boston, 1907, was commissioned a first lieutenant in the medical corps of the United States Army in 1912, was promoted through the various grades to that of colonel in 1932, served during the World War, fellow of the American College of Physicians, aged 59, died Oct. 27, 1941, of injuries received in an automobile accident.

Joseph Dempsey Thompson, Port Arthur, Texas, Memphis (Tenn.) Hospital Medical College, 1906, member of the State Medical Association of Texas, past president of the Calcasieu Parish (La.) Medical Society, formerly a member of the United States Public Health Service, aged 62, at one time on the staff of St. Mary's Hospital, where he died Dec. 25, 1941, of hypertension and cerebral hemorrhage.

Charles Van Wood, Cedartown, Ga., University of Tennessee Medical Department, Nashville, 1896, member of the Medical Association of Georgia, past president and vice president of the Polk County Medical Society, on the staffs of the Hall-Chaudron Hospital and the Cedartown Hospital, aged 66, died Dec. 23, 1941, of carcinoma of the stomach.

Merle Dunning Pierson, Detroit, University of Michigan Medical School, Ann Arbor, 1922, member of the American Academy of Pediatrics, aged 50, on the staff of the Children's Hospital, secretary of the medical executive committee and member of the pediatric staff of the Woman's Hospital where she died, Dec. 20, 1941, of tuberculous meningitis.

John H. Bong, Jasper, Minn., Minneapolis College of Physicians and Surgeons, 1897, member of the Minnesota State Medical Association, formerly president of the local board of health, mayor of Jasper, aged 69, died, Dec. 13, 1941, in Pipe stone of cellulitis of the right arm and streptococcal septicemia.

Lawrence Beauchamp Owens, Columbia, S. C., Medical College of the State of South Carolina, Charleston, 1893, member of the South Carolina Medical Association, mayor of Columbia, on the honorary staff of Columbia Hospital, aged 74, died, Dec. 9, 1941, of coronary thrombosis following pneumonia.

Miles J. Lewis, Marion, Ind., Medico Chirurgical College of Philadelphia 1897, member of the Indiana State Medical Association, past president of the Grant County Medical Society, aged 66, on the staff of the Marion General Hospital, where he died, Dec. 31, 1941, of cerebral hemorrhage.

Eugene Graham Mattison, Pasadena, Calif., University of Southern California College of Medicine, Los Angeles, 1906, fellow of the American College of Surgeons, was on the consulting staff of the Collis P. and Howard Huntington Memorial Hospital, aged 60, died Nov. 30, 1941.

Donald Thomas MacPhail of New York, Medico Chirurgical College of Philadelphia, 1896, served during the World War, visiting surgeon, Manhattan Eye, Ear and Throat Hospital and the New York Eye and Ear Infirmary, aged 70, died Dec. 16, 1941, of coronary occlusion.

Frederic Erskine Montgomery, Forest Hill, N. Y., George Washington University School of Medicine, Washington, D. C., 1904, served during the World War, aged 59, died, Dec. 28, 1941, in St. Luke's Convalescent Hospital, Greenwich, Conn., of coronary disease.

Charles Wilson Johnson, McLeansboro, Ill., Barnes Medical College, St. Louis, 1899, veteran of the Spanish American War, county sheriff, at one time contract surgeon in the U. S. Army, aged 68, died Dec. 23, 1941, in Jefferson Barracks, Mo., of arteriosclerosis.

Eugene Keene Jaudon, Miami, Fla., Medical College of the State of South Carolina, Charleston, 1896, served during the World War, aged 74, died Dec. 19, 1941, in the Veterans Administration Facility, Bay Pines, of myocardial insufficiency and coronary arteriosclerosis.

James Cox Markoe, St. Paul, Jefferson Medical College of Philadelphia, 1882, member of the Minnesota State Medical Association, past president of the Ramsey County Medical Society, aged 85, died Nov. 28, 1941, of uremia, arteriosclerosis and heart disease.

Harry Benjamin Davis of Kansas City, Mo., University of Louisville (Ky.) Medical Department, 1908, member of the American Academy of Ophthalmology and Otolaryngology, served during the World War, aged 58, died, Nov. 23, 1941, of heart disease.

William Roland Butler, Crystal City, Texas, University of Arkansas School of Medicine, Little Rock, 1901, member of the State Medical Association of Texas, aged 75, died Oct. 21, 1941, of hemiplegia, uremia and carbuncle.

Frank Lincoln Tozier, Fairfield, Maine, University of Vermont College of Medicine, Burlington, 1901, member of the Maine Medical Association, aged 72, died Oct. 1, 1941, of diabetes mellitus and gangrene.

Harris Chaim Flinder, Baltimore, Russian University of Warsaw Faculty of Medicine, 1886, Baltimore University School of Medicine, 1902, aged 75, died Nov. 20, 1941, in the Sinai Hospital of heart block.

Leonidas V. Smith, Floydada, Texas, Fort Worth School of Medicine, Medical Department of Fort Worth University, 1906, aged 61, died Oct. 6, 1941, in the Plainview (Texas) Hospital of diabetes mellitus.

C. Frank Hertzog, Olev, Pa., Medico Chirurgical College of Philadelphia, 1889, member of the Medical Society of the State of Pennsylvania, aged 76, died Nov. 4, 1941, of carcinoma of the rectum.

Phonrose Lewis Gardner, Kansas City, Mo., University Medical College of Kansas City, 1905, member of the Missouri State Medical Association, aged 61, died Dec. 1, 1941.

John Chiavetta, Phoenix, Ariz., Rush Medical College, Chicago, 1935, member of the Arizona State Medical Association, aged 38, died Oct. 21, 1941, of streptococcal pneumonia.

Charles Byron Porter, Old Town, Maine, University of the City of New York Medical Department, 1880, aged 86, died Oct. 7, 1941, in Bangor of hypostatic pneumonia.

Emma Caroline Lafontaine, San Francisco, Cooper Medical College, San Francisco, 1887, member of the California Medical Association, aged 77, died Nov. 16, 1941.

James Brown Graff, Worthington, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1910, aged 58, died, Oct. 13, 1941, of chronic myocarditis.

Samuel Brown Gray, Pennsville, Pa., Jefferson Medical College of Philadelphia, 1909, aged 55, died, Oct. 3, 1941, of cerebral hemorrhage and hypertension.

Victor Percy Fleming, Tujunga, Calif., University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1916, aged 52, died Nov. 18, 1941.

Thomas Bertram Williams, Glendale, Calif., Stanford University School of Medicine, San Francisco, 1925, aged 41, died Nov. 28, 1941.

Robert Everett Redmond, Jackson Center, Pa., Menn Medical College, Cincinnati, 1882, aged 85, died Oct. 14, 1941, of myocarditis.

Clarence V. Ward, Indianapolis, Kentucky School of Medicine, Louisville, 1900, aged 67, died Nov. 7, 1941, of coronary occlusion.

Don Creed Wills, Arrington, Va., Medical College of Virginia, Richmond, 1918, aged 68, died Nov. 23, 1941, of bronchopneumonia.

Guy McKevitt Johnson of Los Angeles, Northwestern University Medical School, Chicago, 1908, aged 66, died Nov. 15, 1941.

Correspondence

CARE OF AVIATION PERSONNEL

To the Editor:—Referring to the article entitled "A Panoramic Sketch of the United States Army Medical Service Today" by Joseph R. Darnall, M.D., Lieutenant Colonel, M. C., U. S. Army, Washington, D. C., appearing in THE JOURNAL, Dec. 20, 1941, I would mention the School of Aviation Medicine located at Randolph Field, Texas, the medical service with the Air Corps, with its group and squadron aid stations, and the Aero-Medical Research Laboratory, Wright Field, Dayton, Ohio. The paramount role that the air forces are now playing in this war should be included in any attempted portrayal of the medical service of the United States Army.

In the last war it was learned that in the selection, maintenance and care of flying personnel the average medical officer is no more professionally equipped to discharge these duties than the average expert chauffeur is to pilot an airplane. It was soon learned that in order to equip a medical officer for his duty as a flight surgeon it was necessary that he have special knowledge of physiology, neurology, psychology, cardiology, ophthalmology, otology and organic chemistry, particularly applicable to aviation medicine. As a result of the investigations carried on and the practical application of the knowledge gained, the U. S. Army Air Corps enjoyed a much smaller mortality rate among fliers toward the end of the war than did our allies, who were slow to follow our example.

After the war and for several years the School for Flight Surgeons was located at Mitchell Field, New York, and then moved to Brooks Field, Texas, where was located our primary flying school. When Randolph Field was opened the school, then known as the School of Aviation Medicine, was moved to this new field—the West Point of the Air.

It has been a constant struggle on the part of a few medical officers to maintain the spark of life in the School of Aviation Medicine over the period of lean and unsympathetic years from the ending of the last war to the present, and it is small wonder that its existence has been overlooked. Our air force was permitted to dwindle to a deplorable state, and the School of Aviation Medicine suffered likewise. It was necessary to rob Air Corps stations of needed personnel in order to maintain a staff of instructors at the school. The general importance of this branch of medicine may be realized by the fact that the Navy detailed medical officers to this school for several years and until they established their own School of Aviation Medicine.

Today the great need for flight surgeons is beginning to be manifested, and tremendous effort is being made, with facilities which are still none too adequate, to train rapidly a sufficient number of flight surgeons to meet our present and future needs.

The special training given medical officers at the School of Aviation Medicine is in the nature of a postgraduate course and stresses the practical application of the various subjects taught there as preventive medicine. That is to say, the flight surgeon applies his knowledge in a practical manner to the preservation of the mental and physical condition of the flying personnel. The flight surgeon is well acquainted with the effects of a lack of oxygen, resulting in "anoxia," the effects of rapid ascent to high altitude, resulting in hematoaeroemphysema and the effects of extragravitational forces, resulting in "amaurosis" and syncope. He knows the cause and effect of fatigue in flying personnel and the cause and effect of nervous and mental strain and indoctrinates this personnel in all particulars and practical measures for the prevention of untoward symptoms and consequences. He is trained to detect early symptoms of nervous,

mental or physical fatigue in his flying personnel and to take steps to relieve these conditions before the breaking point is reached.

He knows that the capabilities of the modern military aircraft far exceed the physiologic limits of man and that the efficiency of the airplane is equal only to the efficiency of its operating personnel, and it is his duty to maintain the efficiency of the individual members of his organization's flying personnel, whether they are command pilot, pilot, copilot, navigator, radio operator, gunner, bombardier or observer.

Much of this special knowledge has been gained through the difficult but untiring efforts of the Aero-Medical Research Laboratory located at Wright Field.

Contrary to the common belief that a flight surgeon does nothing but watch his flying personnel and fly about the country on "visits," the fact that a medical officer is rated a flight surgeon does not in any sense relieve him of the routine duties of a medical officer who is not so rated. The duties of a flight surgeon are "additional" duties. It is to be borne in mind that not all the personnel of an air force combat unit is flying personnel. In aerial combat it is not infrequent that crew members are seriously injured but able to return to their home base, where they must be treated in the same manner as casualties occurring on the ground. In air raids on air bases the flight surgeons and their enlisted assistants are apt to be suddenly swamped with large numbers of casualties. Military hygiene and sanitation have the identical standards at Air Corps bases, airdromes and installations, as do posts, camps and stations of other branches and arms of the service.

Flight surgeons are required to fly with their flying personnel in order to observe the psychologic and physical reactions of this personnel in the air and while actually under the stress and strain accompanying the various types of flights and duties performed. Frequently elements of their units will be widely dispersed, and it is necessary to travel from point to point by air to render necessary medical attention and make the necessary sanitary inspections. Frequently it is necessary for a flight surgeon to accompany patients evacuated by air and render necessary treatment en route.

It is necessary for a flight surgeon to understand from actual experience in the air what the problems encountered are and evaluate each individual flying officer and enlisted man's reaction thereto, as it is his duty to recommend the temporary relief from or the return to flying duties of all such personnel, based on their mental and physical fitness.

It may be easily surmised that a medical officer or any one else who has no knowledge of the various duties and problems arising and confronting flying personnel would be extremely presumptuous to recommend relief from or retention to flying of this personnel, which has been specially trained in these duties at tremendous expense to the government. On the other hand, a medical officer who by his training and diligence is enabled to remove from flying, temporarily, an individual who is about to become a total loss, by proper action rehabilitate that individual and finally return him to an extended period of the duty for which he has been trained is not only accomplishing an important economical saving for the government but also actually saving lives. Flight surgeons are indeed cheap insurance when, by their efforts, they may prevent the crash of a single four motor bomber, the loss of which means not only valuable lives from a military standpoint but also hundreds of thousands of dollars in equipment.

At our many training stations where we are training thousands of young men as pilots, the flight surgeon must be on the alert to pick out trainees who are showing symptoms of overstrain, as it is in this category that the first and one of the

greatest stresses is placed on the future flier. With this in mind, it is of paramount importance that those trainees who are unable to withstand completely this stress be eliminated early and before they do irreparable damage to themselves and others.

It appears that we were caught "napping" at Pearl Harbor—unprepared and inadequate at Manila. We are inadequate now in the field of aviation medicine. The awakening to full "air consciousness" of the medical profession is an urgent necessity which must not be ignored.

ALLEN D. TANNEY, M.D., New York.

SPEEDING PRODUCTION OF PHYSICIANS

To the Editor:—I have read your editorial on speeding production of physicians with great interest. I certainly agree with you on the need of thinking through the implications of the accelerated plan. May I submit the following calculations as bearing on the annual production of physicians under the two plans:

Let us assume that the total number of students enrolled in medical schools in this country (N) is approximately four times the number now graduated annually:

$$N = 4 \times 5,300.$$

Under the proposed accelerated plan, N students will be graduated after each three year period, or, in a period of twelve years, a total of $4N$. Under the existing four year plan the total number graduated in the twelve years would be only $3N$. Thus when the whole college-medical school system is geared to the accelerated plan the total annual production of physicians would be increased by $\frac{4N - 3N}{12} = \frac{4 \times 5,300}{12} = 1,767$ physicians

a year. If both colleges and medical schools become geared to the accelerated program, and if the enrolment of colleges and medical schools does not change, the increase will be accomplished without admitting any larger proportion of college graduates to medical schools than at present. If the "speed up" process should be continued long enough, either the secondary schools, the primary schools and eventually the birth rate would have to be geared into the same accelerated pace or a larger proportion than at present of students would have to be admitted to some higher level from some lower level in the educational scheme. However, I trust that the war will be over before it goes this far.

Our own faculty, I may say, has tentatively favored an acceleration plan of completing the course in three years but is still allowing two weeks for vacation at Christmas time and five weeks for vacation in the summer.

STUART MUDD, M.D., Philadelphia.

SUDDEN DEATH IN HEART DISEASE

To the Editor:—Dr. Baer's communication to THE JOURNAL, January 17, commenting on our article "The Sudden Death of Patients with Few Symptoms of Heart Disease" interests us very much because it represents the fairly typical reaction of some physicians when confronted by a proposed therapeutic regimen whose basis is physiologic experimentation. The objections offered to the use of theophylline with ethylene diamine intravenously are: "However, I feel it is not entirely just to develop the (proposed) therapeutic regimen in man"; "There are a number of additional reasons why I think the routine administration of theophylline with ethylene diamine (aminophylline) and atropine is inadvisable"; "I believe a patient with an

acute myocardial infarct should have as little intravenous medication as possible."

These are not very logical objections.

It is recognized by most physicians that a powerful vasodilating drug should be given intravenously with caution to any patient, and particularly when there is known to be a recent myocardial infarction. In the case of theophylline with ethylene diamine this may be accomplished by giving the drug slowly. In our experience no ill effects have occurred in patients or dogs after the use of this drug. Usually only the initial doses are given intravenously; the others are given intramuscularly. The rationale of the therapy—namely, the protection of the uninfarcted myocardium from vasoconstrictor reflexes—requires the administration of the therapeutic agents in a manner that will assure the attainment of the objective. It is also our practice to give coronary vasodilator drugs intramuscularly or orally during the entire period of hospitalization and often for prolonged periods thereafter. Thus late ventricular fibrillation may be less likely to occur.

The concluding paragraph of Dr. Baer's letter represents a misconception of the whole purpose of our paper. He points out, quite correctly, that mortality rates for acute myocardial infarction vary from 8 per cent to 35 per cent and then argues that, since in dogs we reduced the mortality to only 25 per cent, the proposed treatment will not result in much improvement. In untreated dogs, with a complete coronary occlusion and extensive infarction of the left ventricle, the death rate was 75 per cent, and by treatment it was reducible to 25 per cent. To us this means that only one third of the animals destined to die because of myocardial infarction and ventricular fibrillation do so when the reflex mechanisms responsible for death are circumvented. In patients—most of whom have less serious infarctions—a comparable effect would result in a reduction of the mortality rate from 35 per cent to 12 per cent or from 8 per cent to 2.5 per cent, depending on which of Dr. Baer's data one uses. I am not willing to believe that this advantage "would offer little improvement over our present death rate." The experience of the Third Medical service (N. C. Gilbert, M.D., chief) at St. Luke's Hospital, Chicago, with this form of therapy amply justifies the assumptions presented here and will be reported soon.

GEORGE V. LeROY, M.D.

S. SINCLAIR SNIDER, M.D.

Chicago.

TREATMENT OF OSTEOMYELITIS

To the Editor:—The Dec. 13, 1941 issue of THE JOURNAL carries the paper of Drs. Hoyt, Davis and Van Buren in which it is said that I have always advocated some sort of drainage in cases of acute hematogenous osteomyelitis. Yet further along in the paper is a quotation from my writings in which it is specifically stated that such foci of osteomyelitis frequently go on to healing without operation of any kind. I wish to state that the latter statement is the correct point of view.

I should like to emphasize again the more and more frequent possibility of treating this form of osteomyelitis without operation and in the most conservative manner. In previous years this has repeatedly been possible in my experience without chemotherapy, and now with chemotherapy it seems as if this possibility should be accepted as almost a routine response when the condition is seen early; chemotherapy should be properly employed in sufficient dosage and for a sufficient length of time. At last nature is being given the opportunity to do things that operative surgery alone has never been able to do in the past.

A. O. WILENSKY, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO Feb 16 17, 1942 Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL February 7, page 480

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 16 18 Acting Sec, Dr B T Austin, 519 Dexter Ave., Montgomery

ARKANSAS * Medical Little Rock, June 4 5 Sec, Dr D L Owens, Harrison Electric Little Rock, June 4 5 Sec, Dr Clarence H Young, 1415 Main St., Little Rock

CALIFORNIA Written Los Angeles, March 2 5 Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, March 18 Sec, Dr Charles B Pinkham, 1020 N St., Sacramento

CONNECTICUT * Medical Examination Hartford March 10 11 Endorsement Hartford March 24 Sec to the Board, Dr Creighton Barker, 258 Church St, New Haven Homoeopathic Derby, March 10 11 Sec, Dr Joseph H Evans, 1488 Chapel St, New Haven

DELAWARE Dover, July 14 16 Sec, Medical Council of Delaware, Dr Joseph S McDaniel, 229 S State St, Dover

FLORIDA * Jacksonville, June 22 23 Sec, Dr William M Rowlett, Box 786 Tampa

GEORGIA Atlanta June Sec, State Examining Boards, Mr R C Coleman 111 State Capitol, Atlanta

ILLINOIS Chicago April 7 9 Superintendent of Registration, Mr Philip M Harman, Department of Registration and Education, Springfield

INDIANA Indianapolis June 16 18 Sec, Board of Registration and Examination Dr J W Bowers, 301 State House, Indianapolis

KANSAS Kansas City, June 16 17 Sec, Board of Medical Registration and Examination, Dr J F Hassig, 905 N Seventh St Kansas City

KENTUCKY Louisville, June 4 6 Sec, State Board of Health, Dr A T McCormack, 620 S Third St, Louisville

MAINE Portland, March 10 11 Sec, Board of Registration of Medicine, Dr Adam P Leighton, 192 State St, Portland

MARYLAND Medical Baltimore, June 16 19 Sec, Dr John T O'Mara, 1215 Cathedral St, Baltimore Homoeopathic Baltimore, June 16 17 Sec, Dr John A Evans, 612 W 40th St, Baltimore

MASSACHUSETTS Boston, March 10 13 Sec, Board of Registration in Medicine, Dr Stephen Rushmore, 413 F State House, Boston

MICHIGAN * Ann Arbor and Detroit, June 10 12 Sec, Board of Registration in Medicine, Dr J Earl McIntyre, 202 4 Hollister Bldg, Lansing

MISSISSIPPI Jackson, June Assistant Sec, State Board of Health, Dr R N Whitfield, Jackson

MONTANA Helena, April 7 8 Sec, Dr Otto G Klein, First National Bank Bldg, Helena

NEW HAMPSHIRE Concord, March 12 13 Sec Dr T P Burroughs, Board of Registration in Medicine, State House, Concord

NEW JERSEY Trenton, June 16 17 Sec, Dr Earl S Hallinger, 28 W State St, Trenton

NEW MEXICO * Santa Fe, April 13 14 Sec, Dr Le Grand Ward 135 Sena Plaza, Santa Fe

NORTH CAROLINA Raleigh, June 15 Sec, Dr W D James, Hamlet

OHIO Endorsement April 7 Written Columbus, June Sec, Dr H N Platter, 21 W Broad St, Columbus

OKLAHOMA * Oklahoma City, June 10 11 Sec, Dr James D Osborn, Jr Frederick

TEXAS Galveston, March 23 25 Sec, Dr T J Crowe, 918 20 Texas Bank Bldg, Dallas

UTAH Salt Lake City, June 29 30 Assistant Dir, Department of Registration, Mr G V Billings, 324 State Capitol Bldg, Salt Lake City

VIRGINIA Richmond, June 17 20 Sec, Dr J W Preston, 30½ Franklin Rd, Roanoke

WEST VIRGINIA Charleston, March 2 4 Commissioner, Public Health Council Dr C F McClintic, State Capitol, Charleston

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA Tucson, March 17 Sec, Mr Franklin E Roach, Science Hall, University of Arizona, Tucson

COLORADO Denver, March 10 11 Sec, Dr Esther B Starks, 1459 Ogden St, Denver

DISTRICT OF COLUMBIA Washington, April 20 21 Sec, Commission on Licensure, Dr George C Ruhland, 6150 E Municipal Bldg Washington

FLORIDA Gainesville, June 8 Sec, Professor J F Conn, John B Stetson University, De Land

OREGON Corvallis, July 11 Sec, Mr Charles D Byrne, University of Oregon, Eugene

RHODE ISLAND Providence, Feb 18 Chief, Division of Examiners, Mr Thomas B Casey, 366 State Office Bldg, Providence

SOUTH DAKOTA Vermillion, June 5 6 Sec, Dr G M Evans, Yankton

WISCONSIN Madison, April 11 Sec, Prof Robert N Bauer, 152 W Wisconsin Ave., Milwaukee

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Act: Cancer Allegedly Resulting from Trauma—In the course of her employment in September 1938 Mrs Webb claimed to have been struck on her right breast by a large spool of yarn. The blow caused "a little purple spot" on the breast, and by the time she returned home that evening there was "a little lump" in the bruised spot. However, she suffered no pain and continued to work until the following April, when a "lump" having developed in the breast she consulted her family physician, who made a diagnosis of cancer. She was thereafter confined to bed until her death in February 1940 from cancer. Mrs Webb, so she stated, had never before the date of the alleged industrial accident received any injury to her breast, nor had any one in her family ever had cancer. In November 1939 Dr Laws, who was then in charge of the case following the death of the original family physician, removed her right breast. Mrs Webb instituted suit against her employer in January 1940 under the Tennessee workmen's compensation act, in general ascribing the cancer to the industrial accident. Specifically, she alleged "because of the blow the tissues in her breast had been torn loose and weakened and the blood cells and blood vessels therein had been damaged so that by gradual process which was not detectable, a malignant condition was developing." The trial court dismissed the suit on demurrer but the Supreme Court of Tennessee on appeal reversed the judgment of the trial court and remanded the cause for further proceedings. In the meantime, Mrs Webb had died and the suit was revived in the name of her administratrix, and went on to trial. The trial court found for the employer on the ground that "The proof does not establish as a fact that the deceased died as a result of a cancer caused by her alleged injury. That disease is too common to attribute it to a specific cause on mere speculation." An appeal was then had to the Supreme Court of Tennessee.

The principle complaint of the appellant was that the trial court had erred in holding that the proof adduced at the trial did not establish as a fact that Mrs Webb died as a result of cancer caused by her industrial injury and that cancer is too common to attribute it to a specific cause on mere speculation. It is the well established rule, said the Supreme Court, that in a compensation proceeding the findings of fact by the trial judge will not be disturbed by the appellate court if sustained by any material evidence. The correctness of the trial court's findings were then discussed by the Supreme Court in the light of the medical testimony adduced at the trial. Apparently the only medical witness called by the appellant was Dr Laws, who had removed Mrs Webb's breast in November 1939. This witness stated that medical science had never found the cause of cancer, that in many instances medical science does not know that cancer will result from certain conditions, that no one knows of any instances in which cancer has resulted from a traumatic condition but that some authorities state that it results from trauma, and that some medical authorities recognize the fact that cancer may or will in some instances result from a traumatic condition. He would not say that cancer is more likely to occur in the part of the body where there has been a trauma but that in his opinion the cancer that developed in Mrs Webb could be attributed to the blow or bruise on her breast. Specifically he testified

If she got a lick there, had discoloration, probably blood under the skin, and that cleared up, I would think that was the result of the lick. I would attribute it to that any way, but nobody can say positively.

On cross examination he stated that the cause of cancer or its cure is not definitely known and that it is conjecture to say that it is. The witness was shown an article by Dr Francis Ward, director of Cancer Research at Columbia University, entitled "Cause of Cancer," wherein it was stated, in part, that

The cause of cancer is not known, though there are two popular superstitions regarding it. One is, that cancer may be produced by a blow, and the other, that cancer is due to a germ. To uphold either of these there is not the slightest evidence.

The witness stated that, although he had not read the article, he "wouldn't swallow it all. That is one man's opinion." He stated that while thousands of times people have a blow, and no cancer develops, there are many instances in which it does. He illustrated his point by stating that women who have had a child are prone to cancer of the uterus, and the cause is traumatic laceration of the cervix.

Three medical witnesses were called by the employer. One, Dr. Horton, testified that in his opinion cancer cannot result from a blow. This witness agreed with the article of Dr. Ward referred to. In this connection he stated that he had read

just last week the report of four men who have had a great deal of cancer research experience, Harvard men. They think now they have found one of the causes of cancer, which is due to the presence in the blood of free hydrocarbon, and they have examined a lot of them. The belief that trauma may cause cancer, of course, I don't know, but such has never been proven.

The claim that a blow causes cancer, this witness stated, "They claim they have discredited that belief." Another medical witness called by the employer, Dr. Cheney, testified that he had treated Mrs. Webb on several occasions in 1936, 1937 and 1938 for a tumor of the abdomen. He stated that no one knows the cause or cure of cancer, the cause of which is speculative. On cross examination, in answer to a question as to whether or not one of the theories in the medical profession as to the cause of cancer is trauma, he replied that some claim that is a theory, "I don't know. It wouldn't be my theory." Dr. Johnson, the other medical witness called by the defendant, agreed with the article by Dr. Ward on the "Cause of Cancer." He stated on cross examination that the theory that a blow, particularly on the breast of a woman, can cause cancer has been advanced on the ground that any irritation might have something to do with cancer, but such a theory has never been proven to be true. In his opinion, the cause of cancer is purely speculative and is not known.

The trial judge, continued the Supreme Court, found that the proof referred to above does not establish as a fact that Mrs. Webb died as the result of a cancer caused by the industrial injury. Three medical witnesses introduced by the employer testified, as noted, that the cause of cancer is purely speculative, that the idea that a blow on the breast could cause cancer had been advanced but never proven to be true. The only medical witness of the petitioner, Dr. Laws, stated that in effect medical science does not know that cancer will result from certain conditions or that it results from traumatic conditions. For this Court, said the Supreme Court, in view of the medical testimony, to hold that the cancer on Mrs. Webb's breast was caused by the blow she received during the course of her employment would rest in pure speculation, conjecture and guess. It was incumbent on the appellant to establish by competent and material proof that death was occasioned by an accident arising out of and in the course of her employment. Such a finding cannot be based on mere speculation or conjecture.

Accordingly, the Supreme Court affirmed the judgment of the trial court in favor of the employer.—*McBrayer v. Dixie Mercerizing Co.*, 156 S. W. 408 (Tenn., 1941).

False Imprisonment: Affidavits of Physicians in Insanity Inquest Absolutely Privileged.—Ethel Dyer brought an action for damages for false imprisonment against her former husband and two physicians. She alleged that by virtue of affidavits as to her mental condition made "knowingly, maliciously and falsely" by the three defendants in a proceeding to determine her sanity held before a judge of a county court, who "was misled by these false affidavits," she was adjudged insane and committed to a state hospital for the insane, where she was forced to remain for some twenty-one days. The trial court sustained demurrers interposed by the defendants and the plaintiff appealed to the Supreme Court of Tennessee.

Apparently in the appellate proceedings there was involved only the correctness of the trial court in ruling on the demurrers of the physicians. The physicians contended that even if the statements made in the affidavits were false and were made, as

charged, with malice, they were made in a judicial proceeding under oath, in response to a call for their professional opinion, and were, therefore, absolutely privileged and that no claim for damages can be based thereon. The correctness of the physicians' contentions, in the judgment of the Court, was upheld by the decision of the Supreme Court of Tennessee in *Cook v. Galyon*, 109 Tenn. 1, 70 S. W. 607, reading, in part, as follows:

There is a class of cases which are absolutely privileged, and depend in no respect for their protection upon their bona fides. The occasion is an absolute privilege, and the only questions are whether the occasion existed, and whether the matter complained of was pertinent to the occasion. In this class are embraced judicial proceedings. The proceedings connected with the judicature of the country are so important to the public good that the law holds that nothing which may be therein said with probable cause, whether with or without malice, can be slander, and, in like manner, that nothing written with probable cause under the sanction of such occasion can be libel.

Applying these principles to this case, the question is not whether the words spoken by the defendant were false and malicious, but were they spoken in a judicial proceeding, and were they relevant and pertinent to the subject of inquiry in that proceeding, or responsive to questions propounded to the defendant by counsel while being examined therein as a witness? If they were, they are absolutely privileged, and the plaintiff's action must fail.

Now, said the Supreme Court of Tennessee, applying the principles set out in the Galyon case, it is apparent that (1) the affidavits complained of were made in a judicial proceeding and (2) the statements therein were pertinent to the subject of inquiry in that proceeding. The affidavits were a vital part of the judicial proceedings before the judge of the county court and the statements therein complained of, whether true or false, were directly in point on the issue for decision of whether or not the person under examination was of unsound mind. Assuming, as we must, the regularity of these judicial proceedings, the judge appointed a guardian ad litem to look after the interest of the person and examined other witnesses, as well as the two physicians on this hearing. Conceding that error was committed in the judgment and that plaintiff was thereby wronged, and that the affidavits were false, as she charged, nevertheless, for the reasons above given, she has no right of action and the action of the trial court in sustaining the demurrers interposed by the physicians was correct.—*Dyer v. Dyer*, 156 S. W. (2d) 445 (Tenn., 1941).

Society Proceedings

COMING MEETINGS

- Annual Congress on Medical Education and Licensure, Chicago, Feb. 16-17.
- American Association of Anatomists, New York, April 1-3. Dr. Eliot R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.
- American Association of Pathologists and Bacteriologists, St. Louis, April 2-3. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.
- American Orthopsychiatric Association, Detroit, Feb. 19-21. Dr. Norville C. LaMar, 149 East 73d St., New York, Secretary.
- American Physiological Society, Boston, March 30-April 4. Dr. Carl J. Wiggers, 2109 Adelbert Rd., Cleveland, Secretary.
- American Society for Experimental Pathology, Boston, April 1-3. Dr. Harry P. Smith, Medical Laboratory Bldg., Iowa City, Secretary.
- American Society for Pharmacology and Experimental Therapeutics, Boston, March 31-April 4. Dr. Raymond N. Dieter, University of Minnesota Medical School, Minneapolis, Secretary.
- American Society of Biological Chemists, Boston, Apr. 7. Dr. A. K. Balls, Bureau of Agricultural and Engineering Chemistry, Washington, D. C., Secretary.
- American Surgical Association, New Orleans, Apr. 6-8. Dr. Charles G. Mixer, 319 Longwood Ave., Boston, Secretary.
- Central Surgical Association, Chicago, Feb. 27-28. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.
- Federation of American Societies for Experimental Biology, Boston, March 31-April 4. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.
- Pacific Coast Surgical Association, San Francisco and Del Monte, Calif., Feb. 17-20. Dr. F. L. Reichert, Stanford University Hospital, San Francisco, Secretary.
- Tri-State Medical Association of the Carolinas and Virginia, Greenville, S. C., Feb. 23-24. Dr. J. M. Northington, 804 Professional Bldg., Charlotte, N. C., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

11:797-848 (Nov.) 1941

Sputum Studies in Pneumonia. In Vivo and In Vitro Susceptibility of Pneumococci to Sulfapyridine and Sulfathiazole. A. W. Fisch, Detroit—p. 797

*Malignant Neutropenia Following Use of Sulfapyridine. L. M. Goldman, I. Applebaum and W. Antopol, Newark, N. J.—p. 810

Arterial Changes of Skeletal Muscle in Patients with Hypertension of Varied Origin. H. C. Hever and R. W. Keeton, Chicago—p. 818

Egg Albumin Complement Mixtures in Wassermann Test with Normal and Syphilitic Rabbit Serums. J. A. Kolmer, Elmer R. Lynch and Loraine Groskin, Philadelphia—p. 828

Studies of Sicklemia Blood with New Method for Its Rapid Diagnosis. W. J. Tomlinson, Santa Barbara, Calif.—p. 835

Comparative Study of Laughlin Test with Particular Reference to Factors of Experience and Skill in Results Obtained. M. J. Distine, A. W. Ritchie and F. B. Queen, Chicago—p. 842

Malignant Neutropenia After Sulfapyridine.—Goldman and his associates add 2 cases of malignant neutropenia following sulfapyridine therapy to the 28 already reported. From the data on the 30 cases they conclude that the danger of neutropenia is greater when the administration of the drug is prolonged or irregular. The histories of 13 of the 30 patients revealed that the drug had been withdrawn and then reinstated. This suggests sensitization after resumption of treatment. Eleven of the remainder received continuous treatment for ten or more consecutive days and 6 for less than ten days. Of the 12 patients who died, only 1 was given the drug for less than ten days.

American Journal of Hygiene, Baltimore

34:71-132 Section A (Nov.) 1941. Partial Index

91-148 Section B 141-168 Section C 65-80 Section D

Section A

Tuberculosis Studies in Tennessee. Prevalence of Tuberculous Infection and Disease in White and Colored Families as Revealed at Time of Investigation. Ruth R. Puffer, R. S. Gass, W. J. Murphy and W. C. Williams, Nashville, Tenn.—p. 71

Study in Active Immunization Against Epidemic Influenza and Pneumococcal Pneumonia at Litchworth Village. II. Results of Active Immunization Against Pneumonia with Pneumococcus Polysaccharide. M. Siegel and R. S. Muckenfuss, New York—p. 79

Section B

Influence of Sewage Treatment on Bacterial Pollution of New Haven Harbor. G. Feldman and C. E. A. Winslow, New Haven, Conn.—p. 91

Types of Diphtheria Bacilli in New York City in 1940. E. Seligmann, New York—p. 125

Studies on Cultivation of Influenza Virus. Clara Nigg Doris F. Wilson and J. H. Crowlev, Minneapolis—p. 138.

Section C

*Sulfathiazole as Antimalarial. L. Schwartz, W. Turst and H. F. Flippin, Philadelphia—p. 160

Section D

Serum Fraction with Which Antitrichinella (Trichinella Spiralis) Antibody Is Associated. Evelyn Abrams Mauss, Baltimore—p. 73

Sulfathiazole as Antimalarial.—Schwartz and his co-workers used sulfathiazole as an antimalarial for 9 patients who were under treatment for syphilitic meningoencephalitis with artificially induced tertian malaria. Before the antimalarial was used, from three to fifteen chills had been induced. Sulfathiazole,

3 Gm., was administered orally. The initial dose was repeated in four hours, and then 1 Gm. was given every four hours thereafter. The total dose varied from 25 to 50 Gm. Frequent blood counts, urinalyses and blood smears for parasites were made. Blood sulfathiazole levels were obtained throughout the course of chemotherapy. The chills and fever of every patient ceased after treatment with sulfathiazole. The peripheral circulation of 5 patients was apparently cleared of plasmodia. In 1 patient a relapse occurred fifteen days after sulfathiazole was discontinued and in the other 4 there have been no signs of relapse for more than ninety days. The blood of the remaining 4 patients could not be cleared of plasmodia, and the patients experienced relapses twelve, thirteen, sixteen and twenty days, respectively, after chemotherapy was terminated. No serious toxic manifestations followed the administration of sulfathiazole. Further studies of the antimalarial effect of sulfathiazole seem indicated.

American Journal of Pathology, Ann Arbor, Mich.

17:785-922 (Nov.) 1941. Partial Index

Histologic Study of Trophic Effects of Diabetogenic Anterior Pituitary Extracts and Their Relation to Pathogenesis of Diabetes. A. W. Ham and R. E. Harst, Toronto, Canada—p. 787

Histogenesis of Glioma Retinae. Report of Early Case with Review of Literature. K. Y. Chin, Peking, China—p. 813

Carcinoma of Ceruminous Gland. S. Warten and Olive Gates, Boston—p. 821

*Appendical Oxyuriasis. Its Incidence and Relationship to Appendicitis. L. L. Ashburn, Washington, D. C.—p. 841

Foreign Body Giant Cell Granuloma of Spinal Cord Associated with Spina Bifida. B. W. Lichtenstein and J. D. Kirshbaum, Chicago—p. 873

Emboli of Brain Tissue in Fetal Lungs. P. Gruenwald, Chicago—p. 879.

Appendical Oxyuriasis.—Ashburn states that in a series of 2,317 surgically removed appendices oxyurias were found in 184 (7.94 per cent). The sectioned material of 79 was positive, and the oxyurias in 105 were found only by examining the contents expressed from the appendix. The specimens were received from the United States Public Health Service hospitals and from hospitals of the United States Indian Service. The incidence of appendical oxyuriasis among the white beneficiaries of the United States Public Health Service hospitals was 2.88 per cent, among the Indians it was 10.04 per cent and among Eskimos and Aleutians it was 23.97 per cent. The highest incidence occurred in the 7 to 11 year age group, being (for the entire series) 15 per cent for male and 22.22 per cent for female patients. Thereafter the decrease in incidence was gradual until the 32 to 36 year age group, in which a second peak occurred, 7.44 per cent for male and 15.96 per cent for female patients. Appendical infection was rare after the age of 51. Oxyuriasis occurred as frequently in the normal appendix as in the chronically inflamed one and more frequently than in the acutely inflamed appendix.

American Journal of Physiology, Baltimore

135:1-258 (Dec.) 1941. Partial Index

Warmth Sense in Relation to Area of Skin Stimulated. C. M. Herget, L. P. Granath and J. D. Hardy, New York—p. 20

Studies in Exercise Physiology. C. Taylor, San Francisco—p. 27

Observations on Return of Vascular Tone After Sympathectomy. P. M. LeCompte, Boston—p. 43

Adrenal Gland and Food Intake. R. A. Groat, Madison, Wis.—p. 58

Studies on Metabolism of Pantothenic Acid in Man and Rabbits. P. B. Pearson, Dallas, Texas—p. 69

Some Effects of Sulfanilamide on Man at Rest and During Exercise. F. J. W. Roughton, D. B. Dill, R. C. Darling, A. Gravidel, C. A. Knehr and J. H. Talbott, Boston—p. 77

Permeability of Erythrocytes to Radioactive Potassium. L. J. Mullins, W. O. Fenn, T. R. Noonan and L. Haeghe, Rochester, N. Y.—p. 93

Effect of Nephrectomy on Blood Pressure Response to Renin and Angiotensin. S. Rodbard, Chicago—p. 124

Isopectate and Ketonemia in Pancreatic Diabetes. L. R. Dragstedt, J. G. Allen, O. C. Julian and Dorothy Stenger, Chicago—p. 133

Effect of Pancreatic Acheilia on Vitamin K Absorption and Prothrombin Time. E. E. Sproul and E. K. Sanders, New York—p. 137

Exchange of Radioactive Potassium with Body Potassium. W. O. Fenn, T. R. Noonan, L. J. Mullins and L. Haeghe, Rochester, N. Y.—p. 149

Influence of Diet with High Protein Content on Appetite and Deposition of Fat. E. M. MacKay, R. H. Barnes and H. O. Carne, La Jolla, Calif.—p. 193

Observations on Localization of Receptor Area of Bainbridge Reflex. I. R. Ballin and L. A. Katz, Chicago—p. 202

Am. J. Syphilis, Gonorrhea and Ven Dis., St. Louis 25:659-812 (Nov.) 1941

- *Antisyphilitic Treatment: Mortality Studies; Clinical, Statistical and Pathologic Analysis of Forty-Seven Fatal Reactions. R. D. Hahn, Baltimore.—p. 659.
- New Aids in Diagnosis of Lymphogranuloma Venereum. G. Rake, M. F. Shaffer, New Brunswick, N. J.; A. W. Grace, New York; Clara M. McKee and Helen P. Jones, New Brunswick, N. J.—p. 687.
- Lymphogranuloma Venereum Intercurrent with Other Venereal Diseases. M. F. Shaffer, G. Rake, New Brunswick, N. J.; A. W. Grace, New York; Clara M. McKee and Helen P. Jones, New Brunswick, N. J.—p. 699.
- Acquired Syphilis in Childhood and Early Adolescence: Results of Contact Investigation. R. Dyar and Mary Hooke Goodwin, Baltimore.—p. 704.
- Syphilis Case Finding Program in Negro Colleges. P. B. Cornely, Washington, D. C.—p. 713.
- Transfer of Bismuth into Fetal Circulation After Maternal Administration of Sobilminol. H. E. Thompson Jr., L. T. Steadman and W. T. Pommerenke, Rochester, N. Y.—p. 725.
- Prevention of Congenital Syphilis in Large Urban Hospital: Study of Clinic Administration. Louise B. Ingraham and N. R. Ingraham Jr., Philadelphia, in collaboration with H. Beerman, Barbara E. Spence, Virginia Arnold and Elvira M. Hassler.—p. 731.
- Intravenous Vaccinotherapy in Lymphogranuloma Venereum. R. B. Greenblatt and R. Brandt, Augusta, Ga.—p. 751.
- Wassermann Test: XVI. Effect of Arsphenamine and Mercury on Wassermann Reaction. D. L. Belding, Boston.—p. 759.
- *Concurrent Administration of Sulfanilamide and Various Antisyphilitic Remedies in Gonorrhea and Syphilis. W. M. Brunet, N. D. Shaw and C. H. Reinhardt, Chicago.—p. 768.
- Quantitative Study of Reaction of Heated and Unheated Horse Serums to Kline and Mazzini Tests. R. A. Greene and E. L. Breazeale, Tucson, Ariz.—p. 772.

Fatal Reactions Following Antisyphilitic Treatment.—

Hahn states that during twenty-seven years there were 47 fatal reactions to antisyphilitic treatment and that 22 of the deaths were directly attributable to the trivalent arsenicals administered at the syphilis clinic of the Johns Hopkins Hospital. The mortality rate was 1:1,250 patients treated, with 1 death to each 12,000 injections. The mortality rate was three times as great for Negro as for white patients and twice as great for female as for male patients. The more frequent occurrence of acute yellow atrophy among women accounted for the greater mortality among women. Fifteen of 20 patients with this complication were women. Other conditions conducive to hepatic damage were present in at least 8 other patients. Fatal reactions due to dermatitis, blood dyscrasias and arsenical reactions were next in order of frequency. Arsphenamine was responsible for 50 per cent of the fatalities. Fatal reactions, with the exception of the blood dyscrasias, tended to occur after ten or less injections. It is estimated that almost one half of the arsenical reactions might have been prevented by careful consideration of the patient's general physical condition, appropriate modification of therapy, avoidance of technical errors and withdrawal of treatment when signs of intolerance appeared. This precaution could have prevented nearly all deaths due to blood dyscrasias. At the necropsy of 35 patients the most frequent anatomic observations were hepatic necrosis, dermatitis and hypoplasia of the bone marrow.

Sulfanilamide in Gonorrhea and Syphilis.—Brunet and his associates treated 44 patients who had gonorrhea and syphilis with sulfanilamide, arsenicals and bismuth compounds concurrently. A history of previous syphilitic infection was obtained from 18, only 8 of whom had received any previous treatment, which was inadequate. Of the 44 patients, 30 received 2.6 Gm. of sulfanilamide daily without any reaction, 8 were sensitive to this amount but tolerated 1.3 Gm. and 6 took the drug irregularly but still made good progress. Thirty-seven completed their tests of cure of gonorrhea, 5 defaulted before dismissal and 2 lapsed five weeks after admission. The 5 who did not complete all their tests of cure were noninfectious when last seen. Major disturbing reactions from sulfanilamide or from the antisyphilitic drugs were not encountered. One patient had a mild generalized dermatitis, but it disappeared when sulfanilamide was withdrawn, and the antisyphilitic treatment was continued. Four patients had gastrointestinal upsets following the intravenous injection of an arsenical, and anorexia, dizziness, headache and drowsiness disappeared either on the reduction in the dose or the omission of sulfanilamide for several days. The slight cyanosis of the lips disappeared when sulfanilamide was withdrawn.

Archives of Physical Therapy, Chicago 22:643-706 (Nov.) 1941

- Hydrotherapy for Local Injuries and Infections. F. B. Moor, Los Angeles.—p. 645.
- Functional Disorders of Foot and Their Treatment. D. J. Morton, New York.—p. 651.
- *Role of Spas in Medical Preparedness. W. S. McClellan, Saratoga Springs, N. Y.—p. 656.
- Cervicobrachial Syndrome. K. G. Hansson, New York.—p. 662.
- Syphilis Treated with Fever Therapy in Penal Institutions. W. D. Huntley, Jackson, Mich.—p. 667.
- Massage in Internal Medicine. C. J. McLoughlin, Rochester, Minn.—p. 674.

Role of Spas in Medical Preparedness.—McClellan states that if the facilities available in the spas of the United States are properly coordinated they can be used to advantage in the preparedness program. The mineral waters of the spas of the United States are of wide variety. The waters of Saratoga Springs, N. Y., contain large quantities of carbon dioxide, which is widely used abroad for the treatment of circulatory and cardiac disorders. A survey shows that there are spa facilities in thirty-three states in one hundred and three localities, with accommodations for 57,491 patients. In eighty-three localities the facilities are for less than 500 patients each, while in eleven states there are one or more spas with accommodations for 1,000 or more patients. These eleven states have approximately 85 per cent of the available facilities. With the exception of the First Army Corps Area, each area has accommodations for more than 2,000 patients. Also, in each area, except the first and the fourth, there are individual localities for 1,000 or more patients. In nearly all localities the physicians of the community can adequately direct the program for patients undergoing treatment. Many of the hotels at spas are not suitable for operation during the entire year, but selected localities could be chosen and the accommodations remodeled for year round operation. Spa facilities should not be neglected in the nation's plan for better health.

Archives of Surgery, Chicago

933-1160 (Dec.) 1941

- *Clinical Use of Heparin in Peritoneum for Prevention of Adhesions: Report of Fourteen Cases. E. P. Lehman and F. Boys, Charlottesville, Va.—p. 933.
- Multiple Myeloma, with Special Reference to Soft Tissue Metastasis. J. L. Donhauser and W. H. de Rouville, Albany, N. Y.—p. 946.
- Physiologic Behavior of Human Appendix and Problem of Appendicitis: Reaction of Appendix to Drugs. C. Dennis, Minneapolis.—p. 1021.
- Lymphosarcoma of Prostate Gland: Report of Case. W. Kaufmann and A. W. Wright, Albany, N. Y.—p. 1061.
- Anterior Resection for Cancer of Rectosigmoid. J. E. Dunphy, Boston.—p. 1076.
- Surgical Aspects of Pain in Abdomen in Relation to Claims for Compensation. L. R. Kaufman, New York.—p. 1086.
- Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Mexico, D. F., Mexico; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 1094.

Heparin for Preventing Adhesions.—Lehman and Boys believe from results obtained in dogs and in 14 patients that the use of heparin for the prevention of peritoneal adhesions or for the diminution of their reformation after division is theoretically sound. The mechanism is believed to consist in the diminution of the coagulability of the serous exudate which is the response of the peritoneum to injury. However, heparin in preventing the coagulation of exudate prevents the deposition of fibrin in the cut ends of blood vessels, and without adequate hemostasis the use of heparin in the peritoneum will be associated with intra-abdominal hemorrhage. However, if all oozing points are controlled before heparin is introduced, this danger apparently ceases. An enormous number of patients must be treated with heparin before a sufficient number will be reoperated on or examined after death to provide a basis for judging the effectiveness of the intraperitoneal administration of heparin in preventing adhesions in the human being. Until greater experience has been had treatment with heparin should be limited to patients with acute partial or complete intestinal obstruction due to adhesions and particularly to those with previous operations for obstruction or repeated threatening attacks. Heparin should be used only when one is willing to accept the hazard of an insufficiently tried method in preference to a future risk of

significant proportions Heparin should not be used in the abdomen in the presence of an oozing peritoneum after adhesions have been divided or when granulation or subacute inflammatory tissue is present, even if hemostasis is complete

Canadian Public Health Journal, Toronto

32:539-586 (Nov.) 1941

- Presidential Address to Ontario Health Officers Association F Lidou
ceur, Casselman, Ont.—p 539
Meningococcal Meningitis in Ottawa, 1940-1941 W T Shirreff L N
Pearlman, T A Lomer and Diane Croll Ottawa Ont.—p 551
Acute Anterior Poliomyelitis in Alberta in 1941 A C McGugan,
Edmonton Alta.—p 559
Health of the Worker in Industry in War Time J G Cunningham
Toronto—p 562
Communicable Disease Control in War Time J T Phair, Toronto—
p 565
Incidence of Trichinosis in Humans in Toronto Findings in 420 Autop
sies E Kuitunen Ekbrum, Toronto—p 569
Housing and Sanitary Control in Small Urban and Rural Communities
H McIntyre, Kirkland Lake Ont.—p 574

Endocrinology, Springfield, Ill.

29:855-1042 (Dec.) 1941 Partial Index

- Biologic Assay of Adrenal Cortical Activity A Grollman, Winston
Salem N C—p 855
Further Observations on Replacement Therapy in Experimental Adrenal
Cortical Insufficiency with Desoxycorticosterone Acetate and Sodium
Chloride A Grollman, Winston Salem, N C—p 862
Disturbed Carbohydrate Metabolism in Rats Maintained More Than a
Year on Fat Deficient Diet L G Wesson, Boston—p 900
Rapid Method for Iodide Tolerance Determinations A Lein, Columbus,
Ohio—p 905
Thyroglobulin Studies III Chlorogenic Action of Thyroglobulin with
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J W Cavett—p 927
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H Gusman, Atlanta, Ga., and M A Goldzieher, New York—p 931
Experimental Hypertension and Neurohypophysis D G Sattler and
W R Ingram Iowa City—p 952
*Effects of Different Types of Ointment on Percutaneous Potency of
Androgens R R Greene E Oppenheimer, Chicago, M W Burrill
and Dorothy Nelson—p 979
Absorption Rate of Hormone Cholesterol Pellets M B Shinkin and
J White, Bethesda, Md.—p 1020

Percutaneous Potency of Androgens—Greene and his
co workers used three different ointment bases for the percutane
ous administration of testosterone, testosterone propionate and
methyl testosterone They demonstrated on castrated rats that
the different bases variously influenced the effectiveness of the
androgens The three androgens had a still different order of
effectiveness when alcohol was used as the vehicle for percutane
ous administration When administered in alcohol, testosterone
was first in order of effectiveness, while methyl testosterone and
testosterone propionate shared second place

Journal of Immunology, Baltimore

42:251-368 (Nov.) 1941

- Demonstration by Electron Microscope of Combination of Antibodies with
Flagellar and Somatic Antigens S Mudd, Philadelphia, and T F
Anderson, Camden, N J—p 251
*Relationship Between Neutralizing Antibodies Against Influenza A Virus
in Serums of Mothers and Infants E R Rickard and F L Horsfall
Jr New York—p 267
Experimental Diphtheric Paralysis Rose R Feiner, New York—p 273
Serologic Studies with Free Living Protista C Tanzer, New York—
p 291
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Resistance Experiments with *Escherichia Coli* in Synthetic Medium
E Strauss, J H Dingle and M Finland, Boston—p 313
Id Experiments with *Staphylococcus Aureus* E Strauss J H Dingle
and M Finland Boston—p 331
Influence of Iron on Production of Diphtheria Toxin J H Mueller,
Boston—p 343
Toxin Production as Related to Clinical Severity of Diphtheria J H
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Inhibition of Bactericidal Power of Human and Animal Serums by Anti
genic Substances Obtained from Organisms of Typhoid Salmonella
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**Neutralizing Antibodies in Serums of Mothers and
Infants**—Rickard and Horsfall determined the antibody con
tent of the serum of 72 young mothers within a few months of
delivery and of their 72 infants within twelve days to sixteen
months after birth The distribution of antibody levels against

influenza A virus was similar among the mothers and their
infants during the first month of life The neutralizing capacity
of the serum of only 2 infants was slightly higher than that of
their mothers A progressive decrease in the antibody level of
the infants occurred during the first four months of life The
serum of no infant between 12 and 16 months of age possessed
antibodies against influenza A virus The close correspondence
between the neutralizing antibody level of the serum of mothers
and their infants for the first two months after birth strongly
suggested that the concentration of antibodies in the maternal
serum determines the concentration in the serum of the child
The fact that the concentration of antibodies possessed by infants
rapidly decreased during the first four months of life and was
not demonstrable at sixteen months may be taken to show that
the antibodies were not produced by the child but were foreign
substances which were later destroyed or eliminated

Journal of Infectious Diseases, Chicago

69:193-286 (Nov-Dec.) 1941

- Agglutination Reaction in Tularemia J C Ransmeier and C L Ewing,
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Observations Concerning Filtration of *Trypanosoma Lewisii* Through
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Behavior of *Trypanosoma Lewisii* During Early Stage of Incubation
Period in Rat D L Augustine, Boston—p 208
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Vitamin A Deficiency and Intestinal Permeability to Bacteria and Toxin
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with Notes on Methods of Isolation and Serologic Classification of
These Organisms L A Rantz, San Francisco—p 248
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Journal of Pediatrics, St. Louis

19:579-730 (Nov.) 1941

- Bacteriostatic and Bactericidal Agents Obtained from Saprophytic Micro
Organisms R J Dubos New York—p 588
Constitutional Barriers to Involvement of Nervous System by Certain
Viruses with Special Reference to Role of Nutrition A B Rubin,
Cincinnati—p 596
Puzzles of Protein Privation Decade of Research into Biologic Effects
of Restricted Dietary Protein A A Weech New York—p 608
Studies on Meningococcal Infection A Silverthorne and C Cameron,
Toronto, Canada—p 618
Spot Maps of Bacillary Dysentery and Poliomyelitis G M Lyon,
Huntington W Va and A M Price, Charleston W Va—p 628
*Excessive Appetite Behavior Symptom in Maladjusted Children Eva
Linn Meloan East Providence, R I—p 632
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Dobos Denver—p 644
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Congenital Hypoplastic Anemia Case Report C O Kohlbrg, Duluth,
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Histoplasmosis Report of Case in Infant Fifteen Months of Age E P
Scott Louisville Ky—p 668
The Pediatrician and the Teacher E O Melby, Evanston Ill—p 672
Training of the School Physician M J E Senn, New York—p 677

Excessive Appetite—Meloan noticed that an excessive
appetite was a symptom in unobese children of poor social
adjustment almost as frequently as stealing, lying, physical
assault and other better known behavior symptoms A large

appetite is normal only after unusual exertion. Persistent longing for food can hardly be considered normal. Mothers frequently report large appetite as a complaint. A child steals food, steals money or works for money with which to buy food, has frequent "snacks" between meals, prowls around at night for food and consumes more food at regular meals than both the parents. The usual reaction of a parent to such a symptom is to reduce the food intake, without realizing that a needed source of emotional gratification is being removed without the supplying of something to take its place. The parent fails to recognize that food is being used as a support and as a means of overcoming or combating a disturbed mood or psychic frustration. A sudden increase in appetite is seen occasionally in children subsequent to the separation of parents, a death in the family, the birth of a sibling, a scholastic or social success of a sibling, the advent of an outsider in the home and major changes in living arrangements which curtail the child's facilities and is seen also when a child in a large family receives less recognition than his siblings. The last-mentioned situation affects children from families in which there is a dearth of social contact and cultural interest. It is also observed when a parent dwells on his or her own unhappy childhood, illnesses and dissatisfactions. The psychoanalytic interpretation of longing for food is that of an intense oral receptive tendency, the wish to be taken care of and to be loved.

Laryngoscope, St. Louis

51:983-1072 (Nov.) 1941

Available Literature on Pharynx and Pharyngeal Surgery for 1940—Review. F. E. LeJeune and P. J. Bayon, New Orleans.—p. 983.

Evaluation of Labyrinth Fenestration Operation for Chronic Progressive Deafness. E. H. Campbell, Philadelphia.—p. 1009.

Secondary Nasal Deformities Following Correction of Cleft Lip. A. A. Cinelli, New York.—p. 1053.

Foreign Body in Upper Esophagus Requiring External Esophagotomy. M. C. Myerson, New York.—p. 1059.

*Bronchoscopy Without Aid of Laryngoscope. J. Mikell, Tucson, Ariz.—p. 1063.

Bronchoscopy Without the Laryngoscope.—In approximately five hundred bronchoscopies Mikell passed the bronchoscope without aid of the laryngoscope. The larynx, the pyriform fossae and the adnexa should be examined carefully prior to bronchoscopy. After the examination the laryngoscope should be removed and only the bronchoscope passed. The author believes that the laryngoscope is required only when a tube 5 mm. in diameter or less is used or when a large amount of mucus, which blocks the lumen of the bronchoscope, is being expelled through the larynx. He is convinced that the use of the laryngoscope in bronchoscopy under other conditions is unnecessary and that it makes the procedure more difficult for the patient and for the examiner.

New Orleans Medical and Surgical Journal

94:261-310 (Dec.) 1941

*Circulatory Failure in Acute Infectious Diseases. N. J. Bender, Shreveport, La.—p. 261.

Neurosurgical Treatment of Sciatic Pain: Notes on Fifty Consecutive Cases. D. H. Echols, New Orleans.—p. 265.

Acute Mechanical Intestinal Obstruction: Dangers of Prolonged Preoperative Decompression by Means of Miller-Abbott Tube and Gastro-duodenal Suction Drainage. S. A. Romano, New Orleans.—p. 270.

Bladder Insufflation as Aid in Localization of Vesicovaginal Fistula. M. L. Stadiem, New Orleans.—p. 277.

Estrogenic Hormone Therapy in Prostatic Hypertrophy. W. E. Kittredge, New Orleans.—p. 278.

Use of Sulfaguanidine in Controlled Series of Typhoid Cases. W. M. Hall, Shreveport, La.—p. 283.

Diagnosis and Treatment of Gastric Syphilis: Case Report. Grace A. Goldsmith, New Orleans.—p. 284.

Unusual Foreign Body (Fork of Bicycle Handle) in Brain: Case Report. N. L. Hart and G. C. Anderson, New Orleans.—p. 290.

Circulatory Failure in Infections.—Bender states that circulatory failure in acute infectious diseases is due to heart failure and/or peripheral circulatory failure. It is of inestimable importance to determine the exact type of failure, since the treatment of heart failure consists in careful attention to general measures, in the administration of dextrose and possibly in

the use of adrenal cortex extract. In the treatment of peripheral circulatory failure measures to replenish the fluid loss in the system and to correct the abnormal physiologic state are indicated.

New York State Journal of Medicine, New York

41:2275-2370 (Dec. 1) 1941

*Goiter—Indications for Operation: How to Differentiate Toxic Goiter from Conditions Simulating It. G. W. Cottis, Jamestown.—p. 2299.

Preoperative and Postoperative Use of Iodine in Hyperthyroidism. T. B. Jones, Rochester.—p. 2300.

Thyroidectomy: Technic. F. S. Wetherell, Syracuse.—p. 2303.

Many-Stage Operation for Goiter. M. B. Tinker and M. B. Tinker Jr., Ithaca.—p. 2306.

Anesthesia in Goiter Surgery. O. H. Stover, Buffalo.—p. 2307.

Treatment of Complications of Thyroid Surgery. G. E. Beilly, Albany.—p. 2310.

Exophthalmos: Modern Views on Cause, Treatment and Prognosis. J. C. Brady, Buffalo.—p. 2313.

Streptococcal Puerperal Infection. F. L. Adair and Lucile R. Hac, Chicago.—p. 2318.

Ovarian Cancer: Clinicopathologic Evaluation. A. A. Marchetti, New York.—p. 2324.

Follow-Up Study of Arthritic Patients Treated with Activated Vaporized Sterol. R. G. Snyder and W. H. Squires, New York.—p. 2332.

Indications for Thyroidectomy.—Cottis states that two thirds of the conditions given a mistaken diagnosis of hyperthyroidism leading to unnecessary operations come under the head of anxiety, neurosis and neurocirculatory asthenia. Organic heart disease and essential hypertension account for the remainder of the mild forms of depression which between the ages of 40 and 60 constitute a danger and must be guarded against. The broad picture is one of nervousness, weakness, tachycardia, emotional disturbances, tremors and loss of weight or constant underweight. When the sensation of choking (globus hystericus) appears it is not surprising that many of the patients come to the surgeon for thyroidectomy. Unfortunately, once enlargement of the thyroid has been mentioned they are eager for operation and are, therefore, an easy prey for the incompetent or dishonest practitioner. Usually a differential diagnosis is not difficult if the following points are considered: In hyperthyroidism some enlargement of the thyroid is present. Thyroid tachycardia is constant; in neurosis it subsides during rest. The skin of patients with hyperthyroidism is warm and moist; the hands and feet of neurotic patients are usually cold and clammy. In hyperthyroidism loss of weight occurs in spite of a good appetite; in neurosis the appetite is usually poor. Patients with hyperthyroidism are usually intolerant of heat; neurotic patients alternate between sensations of heat and of cold. Few patients with hyperthyroidism fail to improve on iodine administration. Those who do fail to improve have a toxic adenoma which is easily palpable. Proper examination should lead to the discovery of organic heart disease and hypertension. In fully developed hyperthyroidism (whether due to toxic adenoma, diffuse hyperplasia or to large nontoxic goiters producing pressure symptoms) the indication for surgical treatment is no longer debatable. The decision whether or not to operate is presented by two types of patients. 1. It appears that many patients with a slight enlargement of the thyroid and mildly toxic symptoms suffer from functional rather than organic hyperthyroidism. There is often a background of domestic or financial troubles. When the psychic factor is corrected, rest and small doses of iodine and sedatives will cure many of them. Recurrences are not infrequent, but they respond to treatment. If the patient is resistant to iodine, operation is indicated before the thyrotoxicosis becomes too great for safe surgical intervention. 2. Older patients with long-standing heart disease (whether caused or complicated by toxic hyperplasia, toxic adenoma or a large nontoxic goiter) are obviously poor surgical risks. Nevertheless, in some of these bad risks, even though the thyroid factor seems debatable, operation has yielded the most brilliant results. Many patients with cardiac disease who are bedridden, who are no longer responding to medical treatment and whose refractory paroxysmal tachycardia often respond dramatically to operation. An adenoma of the left pole extending well into the thorax should be kept in mind when such a patient is encountered.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:601-640 (Nov. 1) 1941

Correlation of Pathology, Physical Signs and X-Ray Appearances in Development of Lung Cavitation. R. R. Trail.—p. 601.

Treatment of Hallux Valgus Deformity in Soldiers. R. Brooke.—p. 605.

*"Night Blindness"—Psychophysiologic Study: Specific Psychologic Data and Characteristics. E. Wittkower and T. F. Rodger, in collaboration with G. I. Scott and B. Semeonoff.—p. 607.

Closed Plaster Treatment of Burns of Extremities. T. J. Roulston.—p. 611.

Air Raids and the Child. W. E. R. Mons.—p. 625.

Psychophysiologic Study of Night Blindness.—Wittkower and his collaborators state that of 52 soldiers complaining of night blindness only 1 had a true ocular cause for the complaint. The psychologic data for some of the others were: Another member of the family of 9 suffered from night blindness. Complete blindness in near relatives was reported by 7 and severe anomalies of refraction by 8. Thirty-eight had nervous habits: nail biting, thumb sucking, stuttering, fastidiousness about food and speech disorders. Fear of darkness was excessive in 22. Unusual fear of injury was pronounced in 28. Other fears were fear of dogs, robbers, blindness, bayonet practice, heights, enclosed places, water, fire, contamination and infection. Four men were overtly overaggressive in adolescence or in adult life. Two were criminals. The majority were unaggressive, overcompliant, soft-hearted persons. The aggressiveness of some was more or less completely repressed. Most of the men denied direct prying interests, but questioning disclosed that many of them were unnecessarily inquisitive and curious. Most of the patients were inhibited in their desire to be noticed, while 6 were happy only if they could show off. Nine men stated that they had been night blind since childhood, 16 later in life but before the war, 13 since the blackouts had started and 14 during the war. The onset was gradual in 31 and acute in 21. There was no correlation between the personality types of the men and the mode of onset. Night blindness occurred in 11 patients in the course of a nervous breakdown, and in 6 it was precipitated by terrifying war experiences. In general the night blindness, though phenomenologically the same, was etiologically distinct from that due to nutritional causes and was probably of purely psychologic origin.

Journal of Laryngology and Otology, London

56:313-336 (Sept.) 1941

Relationship of Rhinology and Laryngology to Thoracic Surgery. C. P. Thomas.—p. 313.

*Relation of Infantile Mastoiditis to Infantile Mortality. P. W. Leathart.—p. 320.

Mastoiditis and Infantile Mortality.—Leathart states that the vast majority of deaths of infants up to 1 year of age are from bronchopneumonia, lobar pneumonia, gastroenteritis and acute bronchitis, that is air-borne or food-borne infections. At postmortem examination of children undiagnosed mastoiditis is frequently discovered, almost exclusively in infants up to and about 1 year of age certified as having died from one or other of the foregoing infections. During a period of two years, postmortem examination of 60 children less than 1 year old who died from an air-borne infection and of 12 who died from a food-borne infection revealed undiagnosed mastoiditis on one or both sides in 59.6 per cent. During these two years approximately 150 infants with a diagnosis of mastoiditis were operated on, with a recovery rate of 80 per cent. All, or nearly all, these infants would have died had not operation been done and death would have been certified as due to an air-borne or a food-borne infection instead of to mastoiditis complicating the air-borne or the food-borne infection. That the diagnosis of this complication is possible, in fact easy, and operative treatment effective is shown by the case sheets of 32 infants with an air-borne or a food-borne infection and mastoiditis. The case sheets revealed that (1) the diagnosis of mastoiditis before operation was correct in every case, (2) in the majority the condition was bilateral, (3) only 2 of the children were more

than 1 year old, (4) the tympanic membrane of a few showed inflammatory changes and in 2 or 3 pus was seen at the fundus, (5) all the patients were seriously ill and the gross dehydration of many was unrelieved by receiving saline solution intravenously, (6) the glands in the posterior triangle of the neck of all the children were enlarged, (7) 6 died after operation and (8) 26 recovered and left the hospital in good condition. Therefore diagnosis and treatment saved 80 per cent of these infants from death. When an air-borne or a food-borne infection in a child less than 1 year old is not improving the probability of mastoiditis should be considered. Examination with the electric auroscope may reveal a pool of pus at the fundus which is too small to appear outside. Sometimes the tympanic membrane is pink or it may be lusterless or wrinkled like crushed tissue paper. Frequently nothing abnormal is seen. There is one constant physical sign: palpable glands in the posterior triangle of the neck, behind the sternomastoid muscle. Other conditions (sepsis of the skin of the head or ear) which produce such enlargement are rarely found in children less than 1 year of age. Mastoiditis in its catarrhal or purulent stage is by far the most common cause of the enlargement in these infants and should be suspected at once. The bottle-fed infant with an air-borne or a food-borne infection and the healthy bottle-fed infant should never be fed while they are lying down. Between feedings they should be propped up and constantly turned from side to side. The adoption of these measures has definitely decreased the incidence of mastoiditis complicating air-borne and food-borne infections among the infants treated at the Royal Liverpool Children's Hospital and has also promoted spontaneous recovery in infants not ill enough to require surgical intervention.

Lancet, London

2:507-548 (Nov. 1) 1941

Some Problems of Wound Infection. A. A. Miles.—p. 507.

Pneumococcal Meningitis: Fourteen Cases with One Recovery. W. T. Cooke.—p. 510.

Id.: Recovery with Sulfathiazole. S. J. Howard.—p. 512.

Cortical Necrosis of Kidneys Complicating Perforated Gastric Ulcer. B. Godwin and A. J. McCall.—p. 512.

Bacteriologic Air Analysis by Cloud Chamber Method. S. D. Elliott.—p. 514.

Gas Gangrene of Eye. A. G. Cross.—p. 515.

Forty Cases Treated at Allendale Curative Workshop. Elizabeth Casson.—p. 516.

Location of Foreign Bodies by Radio Frequency Probe. F. T. Farmer and S. B. Osborn.—p. 517.

*Pulmonary Tuberculosis in the Services: Survey of 100 Cases. J. Aspin and R. Stalker.—p. 518.

Anterior Dislocation of Radial Head with Fracture of Shaft of Ulna. E. N. Wardle.—p. 520.

Sulfathiazole in Staphylococcal Lung Infections. G. Melton.—p. 522.

Acute Laryngitis Complicated by Recurrent Paralysis. A. J. Moffett.—p. 523.

Pulmonary Tuberculosis in the Services.—Aspin and Stalker observed 100 soldiers and airmen suspected of having pulmonary tuberculosis who were sent to a sanatorium from military hospitals and sick posts. According to the final diagnosis, 8 were nontuberculous. Of 10 who previously had been notified that they had tuberculosis only 1 deliberately concealed some essential information because he wanted to join up to get a "soft job." The others felt they were helping their country by enlisting. Eighteen others gave a history of a parent, brother or sister either being treated for pulmonary tuberculosis or dying of the disease. Three fourths of the men were conscripts whose military service amounted to less than a year. While 4 old regulars could muster sixty-four years of service among them, 12 others could not together make up six months of service. The 100 men were divided into two groups—those in whom miniature roentgenograms at enlistment would have revealed lesions suggestive of pulmonary tuberculosis and others in whom it would not have. Study at the sanatorium suggested that abnormal shadowing or displacement of the mediastinum would have been clear enough at enlistment in 46 of the 100 men to have been detected by miniature roentgenography. The stage at which the disease was diagnosed in the men did not differ materially from the stage at which diagnosis is made in civil life.

Helvetica Medica Acta, Basel

8:379-522 (Aug.) 1941

- *Study of Osteopathy Due to Fluorine Poisoning. F. de Senarclens.—p. 379.
- Prethoracic Esophagoplasty by New Esthetic Method with Enclosed Epithelial Graft. M. Rapin.—p. 429.
- *Effect of Various Anticoagulant Solutions on Evolutive Forms of Thrombocytes. S. Sonder.—p. 436.
- Relation Between Experimental and Essential Hypertension: Basis for Theory of Enzymatic Mechanism. W. Rieben.—p. 463.
- Wolff-Parkinson-White Syndrome and Its Pathology. I. Mahaim.—p. 483.
- Association of Roentgenology and Gastroscopy in Study of Gastroenterostomies. M. Demole, P. Godard and R. Sarasin.—p. 494.
- Puerperal Mastitis: Prophylaxis and Therapy. F. Chatillon.—p. 506.

Bone Changes Due to Fluorine Poisoning.—De Senarclens points out that intoxication with fluorine, like lead poisoning, plays an important part in industrial diseases. The use of cryolite (Na_3AlF_6 , or sodium aluminum fluoride) in the production of aluminum provokes emanation of vapors which contain fluorine and exert a toxic effect on the workers. The author reviews the literature on fluorine poisoning and describes his own experiments on rabbits, rats and goats. He concludes that fluorine has a particular affinity for the skeleton and the teeth. He was unable to produce macroscopic lesions, but the microscopic lesions appeared rapidly, if the intoxication was severe. The lesions are dependent on the storage of the agent in the skeleton, if fluorine is administered in a dose which only slightly exceeds physiologic elimination. Fluorine provokes osteopathy of the osteitis fibrosa type. During the first phase a destruction (osteoclasia) takes place that corresponds to the picture of a progressive atrophy. The second phase is osseous regeneration (osteoplasia, osteosclerosis). Sodium fluoride is more toxic than is calcium fluoride because of its greater solubility. The elimination of fluorine is probably regulated by the parathyroids. The author considers various hypotheses with regard to the pathogenesis of skeletal fluorosis: the calciprivic theory, the theory of a deficiency of mineral salts or of vitamins, as well as the theory which ascribes the osteopathy to a renal lesion. The hypotheses according to which goiter and hyperemia act as pathogenic agents appear erroneous to the author. He suggests a theory which presupposes the presence of a tissue and humoral acidosis resulting in a withdrawal of salts of skeletal origin and in decalcification. Decalcification in an acid milieu takes on the character of osteitis fibrosa. The disturbances of the apposition will be due to an inhibiting action of fluorine on the phosphatase, notably on the second phase of its action (precipitation and distribution of the phosphocalcic salts). The dental lesions consist in damage to the enamel, which becomes lusterless and chalky and exhibits transverse depigmented bands. The friability and wearing away of the teeth, extreme mobility in the alveolus and lesions of the paradentosis type must be attributed to atrophy of the alveolar edges. Other organs exhibit lesions due to fluorine poisoning. Hemosiderosis of the spleen is found in the majority of animals, myocarditis in one fourth and nephrosis in a smaller number of rats and rabbits. Of the 3 goats 1 exhibited glomerular nephritis and another nephrosis. Other disorders were microfollicular goiter, testicular atrophy and chronic gastritis. Intoxication developed in a suckling kid during the administration of fluorine to its mother. Sodium fluoride provoked abortion in 1 of 2 goats.

Effect of Anticoagulant Solutions on Thrombocytes.—Sonder describes his studies on the influence exerted by different anticoagulants on the evolutive forms of thrombocytes. His aim was to find the most suitable solution for the demonstration of thrombocytes in dark field preparations. Among the substances investigated were solutions of magnesium sulfate, sodium citrate, sodium oxalate, a solution designated as liquemin, Corelli's solution, hirudin solution, Lenggenhager's solution and a solution known as liquid. With the aid of these different anticoagulants the thrombocyte could be observed as a cell consisting of cytoplasm and granules. With the aid of magnesium sulfate diverse pictures were observed: star shaped cells, spider or butterfly shape, cells with pseudopodia with club-shaped or flail-like ends, cells with double-contoured pseudopodia, cells with short and long pseudopodia and cells in an irritative or in a quiescent state. The author found a 14 per cent solution of magnesium sulfate particularly suitable. This solution permits the clearest visualization of the active forms and their

evolution. The quiescent forms can be demonstrated by a 2 per cent solution of sodium citrate and still better by a 1 per cent solution of sodium oxalate. Quiescent forms predominate if sodium oxalate solution is used. They are mostly round and exhibit almost no amoeboid movements. The oxalate appears to exert a damaging effect on the thrombocytes. Liquemin solution proved especially effective in demonstrating the various phases of the elimination of fibrin needles after the addition of thrombin solution, the formation of the fibrin reticulum and the dissolving processes of the thrombocytes at the coagulation centers, probably because it has a weaker anticoagulating effect. Liquid is entirely unsuited because of its dissolving effect on the thrombocytes. With regard to the clinical use of anticoagulants the author concludes that sodium citrate solution is best suited for inhibiting coagulation in blood transfusion; the predominance of quiescent forms seems to indicate that there is less danger of thrombosis. However, in a case of hemostatic blood transfusion liquemin is preferable because of its slight inhibiting effect on the coagulation and because it impairs the thrombocyte function less than other anticoagulants, but the rather frequent appearance of piles of thrombocytes indicates a greater danger of thrombosis.

"Gann," Tokyo

35:133-245 (June) 1941. Partial Index

- *Experimental Production of Liver Cirrhosis by Furfural Feeding. W. Nakahara and K. Mori.—p. 208.

Cirrhosis of Liver by Furfural Feeding.—Nakahara and Mori report experiments confirming the successful production of cirrhosis of the liver by furfural feeding in rats. Furfural ($\text{C}_4\text{H}_3\text{O}_2\text{CHO}$), one of the essential constituents of Japanese rice wine (saké), is a practically colorless liquid which has a boiling point of 160 to 162 C. (352 to 355 F.) and which readily polymerizes. When fed with rice in amounts varying from 10 to 50 cc. per kilogram of body weight, furfural may produce early death in animals. Generally speaking, rats fed on these amounts of furfural begin to show evidence of hepatic cirrhosis in sixty to ninety days; much smaller feedings of furfural may not lead to such a pathologic condition until three hundred to five hundred days later. The earliest change in the liver of animals so fed was the development of a granular or nodular surface, especially noticeable in the caudate lobe. While the organ tended toward paleness in color, the nodular parts, varying greatly in size, were never entirely white. When furfural is fed in small amounts over a long period of time, the cirrhotic changes are more or less localized, although the affected areas themselves are even firmer and have more irregular surfaces, as compared with those of animals fed larger amounts of the material. In experiments in which furfural feeding was discontinued after one hundred and forty-two days, the animals dying after discontinuance of the experimental diet showed increasing degrees of fibrosis; the cirrhotic areas in their livers presented firm, distinctly whitish and evenly granular or smooth surfaces. In other organs furfural feeding produced no gross changes. Histologically the early changes are dilatation of the sinusoids with engorgement and some changes in the Glisson capsules, consisting of round cell infiltration, an increase in connective tissue and a distinct proliferation of the transitional epithelial cells. The last mentioned cells appear to be the cellular element which plays a significant part in producing the ductlike structures in furfural cirrhosis. Later they produce the typical picture of annular cirrhosis, and together with the proliferation of connective tissue elements, particularly collagenous and reticular fibers, these cells reduce the size of liver lobules and divide them into coarse netlike structures. In livers with advanced cirrhosis there may occur actual tumor-like enlargement of the parenchyma tissue, composed of lobules containing hypertrophic liver cells. These typical ductlike structures frequently are irregular in size and shape, sometimes showing fantastic convolutions and enlargement of the lumens. Some of these dilated lumens, often cystic and papillary in appearance, may contain amorphous matter suggestive of products of secretion. The authors express the opinion that the cirrhotic changes produced by furfural feeding are initiated by the primary productive interstitial processes, without noticeable necrosis of hepatic cells, and are characterized by the prominent annular picture and proliferation of pseudo bile ducts.

Book Notices

Wounds and Fractures: A Clinical Guide to Civil and Military Practice. By H. Winnett Orr, M.D., F.A.C.S., Chief Surgeon, Nebraska Orthopedic Hospital, Lincoln. Cloth. Price, \$5. Pp. 227, with 137 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

In this purely personal review of a wide experience with traumatic wounds and fractures, Dr. Orr presents his own description of the "Orr method." The work is timely, as the "method" has been widely advocated and used during the present war emergency. In his own words, "The Orr method is not simply a matter of infrequent dressings with a vaseline pack. It calls for all the other essentials of surgical care; namely, adequate primary drainage, protection of the patient's wound against secondary infection, immobilization in correct position and good general care." The general principles which are brought forth have received wide acceptance.

The actual technic used to achieve rigid intrinsic skeletal traction and fixation should not be confused with the principles which may be termed the Orr method. Many of the opinions expressed in this work will not be accepted without argument. Widespread use of fixation and transfixation pins is advocated, but mention of their dangers is not made, particularly when such pins are used in the site of the fracture. The author uses a much more widespread type of plaster fixation than is commonly considered adequate, using double long leg plasters for compound fractures of the tibia and fibula and advocating the use of a double spica dressing even though an adequate reduction and nailing operation has been done in a fracture of the neck of the femur. No ill effects from prolonged immobilization in plaster are recorded; rather the opposite view has been taken, that joint stiffness is the result of inadequate or insufficient immobilization.

In the section devoted to the care of compound, contaminated and infected wounds, there are several opinions expressed which may be questioned. The subject of gas bacillus infection is dismissed in one paragraph with the statement "If gas bacillus infection is present, more extensive provision must be made for drainage and access of air to all parts of the wound, but otherwise the treatment is the same. Correct position of the limb and immobilization of the extremity are just as important as under less dangerous conditions." In the care of a contaminated wound, proper emphasis is laid on adequate exposure of all reaches of the wound, but a minimal amount of attention paid to the actual débridement. Dr. Orr still specifically advocates the use of iodine and alcohol used locally in the preparation of the wound for débridement. No contraindications to the use of rigid pin fixation in a closed plaster are mentioned at any point, yet in inexperienced hands the adoption of this method of therapy might well lead to serious consequences.

It is in the field of compound fractures that the present work will prove of interest, and here the basic principles of the author's method of treatment is the essential contribution of the whole book. He considers every open or compound fracture to be actually or potentially infected. If the wound is a clean one, the purpose is to repair it by aseptic surgical measures and leave it alone; for a soiled or infected wound, to clean it up surgically and provide drainage. This is done by wide open aseptic packing with a petrolatum gauze pack. The petrolatum pack is not a wick to drain the wound or a plug to fill it like a cork. The wound is not distributed or dressed unless pain, swelling, rise in temperature or high white blood cell count gives evidence of a return of inflammation in a wound or the fracture area of sufficient severity to warrant intervention. If this is necessary, the proper surgical drainage should be instituted and the same program again carried out. Rigid fixation of the fracture fragments by one means or another is an essential part of the treatment, not merely the encasement of the limb in a circular plaster of paris splint.

Proper care of traumatic wounds throughout the world has been improved through the efforts of Dr. Orr beyond question. This has been his greatest contribution to the field of surgical practice, and in this work he emphasizes over and over again

the clinical principles on which his views are based. Any disagreement with the technical methods employed by others cannot detract from this fact. It must be remembered that this work presents nothing beyond the author's own experience, and many of the case reports incorporated speak for themselves.

An Account of Twelve Months of Health Defense Containing the Activities of the Health Department of the City of New York for 1940 with Comparative Vital Statistics Tables and a Review of Developments Since 1934. Edited by Savel Zimand. Fiorello H. LaGuardia, Mayor. John L. Rice, M.D., Commissioner of Health. Cloth. Price, \$1. Pp. 283, with 25 illustrations. New York, 1941.

For the fourth year in succession, the Annual Report of the Department of Health of the City of New York has appeared in book form and with an editorial approach which represents something more than the traditional recital of work done, budgets allowed, citizens arrested, literature distributed, disadvantages suffered or overcome, achievements hailed and failures explained. Each of these reports has been keyed to a specific phase of health progress in the work of the department. This volume is appropriately titled to catch the current interest in national defense, in which health is an important consideration.

The book presents the various phases of the work of the health department, including the conventional divisions from vital statistics to venereal disease control. The factual tabular material is concentrated at the back of the book, where it does not interfere with easy reading of the narrative summaries of the work of the several departments yet is available when needed. Considerable tabular material which bears direct relationship to accompanying tests is found in the body of the report.

This constitutes a good report of a first class job of public health administration. Physicians reading or scanning the report will be pleasantly impressed with the numerous examples of cooperation between the department of health and the five county medical societies of Greater New York and the New York Academy of Medicine. Aside from its value as a historical record of health administration in the nation's greatest city and the interest attached to the original conception of district administration which is being experimentally worked out in New York City, this book should be useful in public health training schools for all kinds of public health personnel and should also be a reference book of tremendous value in any college or high school library, where it should serve as a rich source of information for studies and project work.

Contribution to the Knowledge of Congenital Dislocation of the Hip Joint: Late Results of Closed Reduction and Arthrographic Studies of Recent Cases. By Erik Severin. Translated from the Swedish by Helen Frey. Acta chirurgica Scandinavica, Vol. LXXXIV, Supplementum 63. Paper. Pp. 142, with 44 illustrations. Stockholm: P. A. Norstedt & Söner, 1941.

The introductory chapter of the history of congenital dislocation is well presented, though only meager recognition is given to Paci, pre-Lorenz attempts of reduction, with a review of statistical data on end results, including these of Lorenz, Lange and the latest reports of Putti (1934), Annovazzi and others. Although the author objects to statistical series which do not contain all cases treated (which seems to be hardly possible to obtain), a certain weeding out for lack of subsequent information is necessary. His statistical study is based on a material of 330 cases which remained after eliminating unsuccessful reductions, cases too old, and the like, and of this group over 90 per cent could be reexamined for the final statistics, leading to three hundred and thirty early results; but his data are valuable because of the homogeneity of his material, which is treated under the same supervision and same method throughout and the percentage of his reexamined cases is high. In his primarily successful cases the late results are based on roentgenologic data, the so-called Wiberg angle being used for the standard of normality and the x-ray end results being divided into six groups, which range from complete anatomic cure to complete redislocation. The reader will be interested in the tabulations of the late end results from the roentgenologic angle, on the observation of 306 cases with 417 hips; also in his tables on relation of age and end result in x-ray terms, especially the relation between development of femoral head and age at reduction, and the relation of deformation of femoral head to age of reduction.

Owing to the extremely critical standard, the author finds that good late results judged from the roentgenologic aspect are found in only one tenth of the cases treated with good primary results.

Chapter 6 is devoted to the development on the healthy side in 190 cases of unilateral congenital dislocation. He finds in no less than 57 of these dysplasias and subluxations, considering all cases in which the angle of inclination of the acetabular roof after the first year of life was 30 degrees or more.

A comparison of late functional results with late roentgenologic findings leads the author to the conclusion that of 448 hips treated with good primary results only about one fourth functioned perfectly five years or more after treatment, which is in contrast to Max Lange, who finds 75 per cent good function in his follow-up series.

The second part of the book is devoted to arthrographic studies made with a contrast medium, parabrodil, for which the author has worked out his special technic. Several pertinent facts are established thereby which otherwise would escape observation, for instance, relationship of the cartilaginous limbus to the head and the ligamentum teres. Especially the degree of penetration of the head into the acetabulum after reduction and progressive changes in such penetration are beautifully illustrated by a number of excellent roentgenograms.

The monograph is well written, carefully prepared both from the historical and the observational angle and excellently illustrated. The x-ray studies of the second part are particularly attractive.

Infant Nutrition: A Textbook of Infant Feeding for Students and Practitioners of Medicine. By Williams McKim Marriott, B.S., M.D. Revised by P. C. Jeans, A.B., M.D., Professor of Pediatrics, College of Medicine, State University of Iowa, Iowa City. Third edition. Cloth. Price, \$5.50. Pp. 475, with 31 illustrations. St. Louis: C. V. Mosby Company, 1941.

This is a treatise on modern infant feeding and nutrition based on sound physiologic and chemical principles. In keeping with modern advances in science, various chapters have been rewritten. The chapter on vitamins is particularly important. The present exploitation of vitamins has left the public, and the practitioner as well, greatly confused. Marriott and Jeans review the subject thoroughly and concisely. Their view that excessive doses of vitamin D retard growth and that concentrated preparations are less efficiently utilized is significant. The chapter on cow's milk now includes a discussion of the low curd tension and soft curd milks which are frequently used in the artificial feeding of infants. The chapter on the diet of the normal infant is a discussion in greater detail with respect to the advantage and disadvantage of feeding various foods based on the nutritional requirements of the infant. The chapter on celiac disease possibly could be more complete in its discussion of the diagnosis with particular reference to cystic disease of the pancreas and the possible factor of food allergy in the celiac syndrome. A new chapter briefly discusses allergy in relationship to infant feeding. The value of sulfanilamide and its derivatives in the treatment of various infections is discussed. The chapter on rickets, tetany and scurvy has been enlarged to include the more recent methods of prophylaxis and treatment with the newer vitamin preparations.

Out of the Test Tube. By Harry N. Holmes, Ph.D. Third edition. Cloth. Price, \$3. Pp. 305, with 102 illustrations. New York: Emerson Books, Inc., 1941.

Scientists with a literary inclination and writers with a scientific bent have discovered that the public is avidly interested in what's going on in science. Unfortunately too many of these writers treat their subject matter in terms of melodramatic heroics, creating nothing more than a distorted caricature of the facts. They paint a picture of scientific research as something carried on at a high emotional pitch like stunt flying or a rescue at sea. The host of real scientists laboring from day to day, year in and year out, to uncover the stuffy but important little facts that serve as the backbone of scientific progress would appear, if the truth was known, as unimaginative dullards in comparison with the fictional heroes created by the popular writers' imaginations.

Fortunately for the public there are a few consummate artists among those who write on scientific subjects. In the forefront of these stands Dr. Harry N. Holmes. Chemistry is fortunate

to have in its ranks a spokesman with his literary talents. In a direct, honest, clear, pictorial style he presents his science in a manner that is not only informative and educational but as entertaining as many books that are read for diversion. With "Out of the Test Tube" and Dr. Holmes's latest textbook on chemistry under his arm a high school or college student is prepared to learn chemistry and like it. While either of these volumes will stimulate his interest in the subject, there is grave peril that together they might be sufficient to make him want to be a chemist.

Medizinische Praxis: Sammlung für ärztliche Fortbildung. Herausgegeben von Prof. Dr. L. R. Grote, Direktor der Medizinischen Klinik des Rudolf-Hess-Krankenhauses Dresden, Prof. Dr. A. Fromme, Direktor der Chirurgischen Abteilung des Stadtkrankenhauses Dresden-Friedrichstadt, Prof. Dr. K. Warnekros, Direktor der Staatlichen Frauenklinik zu Dresden, und Prof. Dr. F. Lange, Direktor der Medizinischen Klinik des Stadtkrankenhauses Dresden-Friedrichstadt. Band XXX: Viruskrankheiten des Menschen. Von Professor Dr. med. E. Haagen, Abteilungsleiter am Institut für Infektionskrankheiten "Robert Koch," Berlin. Paper. Price, 10 marks. Pp. 162, with 26 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1941.

The purpose of this volume as expressed by the author in his preface is to furnish a handbook on virus diseases for the practicing physician rather than one for the investigator and specialist. The volume has seriously attempted to meet this need, and the mode of presentation is such as to cover the major points of knowledge from both the technical and the practical side. There is some limitation in bibliography as well as in the points of view. The sections on therapy are essentially primitive and scarcely constitute the type of discussion one would anticipate for the practicing physician. Many of the therapeutic measures would not conform to accepted American standards. Nevertheless the volume has points of value in that it brings together discussions of most of the virus diseases which are of clinical importance. Arrangement by diseases is based more on clinical similarities than on an arbitrary classification of viruses. There is little reason at the present to recommend it for the American physician, since this information can be obtained from textbooks printed in this country, while the present volume will probably not be obtainable.

The Secret of Better Health. By Harold J. Relly, D.Sc., President of the New York State Society of Physiotherapists. Cloth. Price, \$2.50. Pp. 221, with illustrations. New York: Carlyle House, 1941.

This book apparently promises to give the layman all the advice necessary for good health and long life. It does not live up to its promise. Advice on diet and nutrition is always eagerly sought by the layman. In this book the reader is told that one of the cardinal points to remember in dieting is no "to mix protein and carbohydrates in one meal." Also that soybeans contain no fat. Other bits of misinformation are that "bunions actually are arthritis" and that hypertension is a symptom of old age. The chapter devoted to hypertension leads the reader to believe that the cause is principally overwork and overeating and that the necessary treatment is increasing the elimination through exercise and more roughage in the diet. In spite of the occasional suggestion to "see your doctor first," the reader is likely to try out first the advice given in the book. The book is written in a breezy, smart-cracking style which makes it easy to read; nevertheless it cannot be recommended by the physician for the lay reader.

Housing for Health: Papers Presented Under the Auspices of the Committee on the Hygiene of Housing of the American Public Health Association. Paper. Price, \$1. Pp. 221, with 16 illustrations. New Haven: The Committee, 1941.

This collection of papers presented under the auspices of a committee on housing of the American Public Health Association is of primary interest to the health official or the housing expert. Subjects discussed include health and housing, health centers, health services, housing projects, heating and ventilation of a home, family life as the basis of home planning and the social effects of good housing, as well as others. The practicing physician is also concerned with these problems. In recent years the problem of heating and ventilation of the home has become a popular one. Like the subject of nutrition of the body, every one is talking about it, and the physician is frequently called to act as referee. This book gives him excellent summaries of this topic, as well as the basic principles of healthful housing.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

WEATHER, CLIMATE AND RHEUMATISM

To the Editor:—The Board of Public Welfare is planning to erect within the next few years a new institution for the aged and infirm of the District of Columbia. Plans are already under way for the choice of a location for the new institution. Our present buildings are located on the banks of the Potomac River. The low altitude and the proximity of the river make for considerable dampness in the atmosphere surrounding the home. Fully 50 per cent of our inmates suffer with "rheumatism" in one form or another. Since I began my duties here last June I have heard many patients make the complaint "my rheumatism is much worse since I came down here." Since we have no facilities for adequate physical therapy it has been necessary for me to dispense salicylates "by the bushel." Would you kindly advise me as to the effect of atmospheric conditions on patients suffering with various types of chronic locomotor diseases? Do you think it advisable to remove the institution to a higher and drier climate if such a measure entails a considerable expense?

Donat P. Cyr, M.D., Blue Plains, D.C.

ANSWER:—Since the days of Charcot and Garrod, dampness and chilling have been condemned by physicians and rheumatic patients as factors which predispose to the onset or aggravation of rheumatic diseases. Despite this general opinion there are few precise data to support it. Glover, who prepared a report on chronic arthritis for the British Ministry of Health (Report No. 52, Ministry of Health, London, 1928) regarded the idea as undoubtedly correct but was unable to find accurate supporting data. Other difficulties present themselves; chief among them is the vagueness of the term "rheumatism" and the fact that atmospheric conditions, weather and climate are made up of variable components—temperature, barometric pressure, atmospheric electricity, humidity and the like.

Probably the chief forms of "rheumatism" encountered in a home for the aged and infirm are osteoarthritis and its secondary fibrositis. Patients with these diseases often complain of the aggravating effects of damp and cold, but they do so less consistently than do patients with rheumatoid arthritis or with primary fibrositis. But such patients do not all act alike; although most patients with rheumatoid arthritis feel better when the temperature and barometer rise and when the humidity falls, some patients actually feel better in winter or with a falling barometer, and with cold, rather than warm, applications (Rentschler, E. B.; VanZant, F. R., and Rowntree, L. G.: Arthritic Pain in Relation to Changes in Weather, *THE JOURNAL*, June 15, 1929, p. 1995). Some patients are apparently disturbed more by changes in barometric pressure than by changes in temperature; others are more susceptible to alterations in humidity. In still other cases, alterations in atmospheric electricity are suspected as the cause of aggravation of symptoms. Rheumatic patients often feel better when they spend the winters in southern Arizona, probably because of the relative constancy in barometric pressure and in humidity and despite the notable fluctuations in temperature (fluctuations of as much as 50 degrees) which occur between the winter days and nights.

Debates on the influence of climate on the incidence of rheumatic diseases seem to be settled more by local patriotism than by scientific data, according to Tegner (*Am. Rheumat. Dis.* 1:249 [Oct.] 1939), who noted that "rheumatism" was as common in the hills of Sweden as on the flat lands of Denmark and Holland; it is supposedly more common in the cold damp seaside parts of England, but in Scandinavian countries rheumatism sanatoriums are generally placed by the sea. Physicians in European countries with much coast line favor the sea air for their rheumatic patients, those in countries with little coast line regard the sea air as dangerous, and those in mountainous countries favor high altitude. Therefore Tegner concluded that in the temperate zone local climate is an unimportant factor in the incidence of chronic rheumatism. In a recent study made in southern Australia no certain relationship was found between the wetness of the season and the incidence of rheumatic fever, and the presence of creeks and rivers played no etiologic role. Nevertheless, in sections where dry heat prevailed there was less rheumatic fever than in those with combined dampness, high rainfall and relatively cold temperature (Report on the Epidemiology of Rheumatic Infection in South Australia, *M. J. Australia* 1:461 [April 6] 1940). In New Haven, Conn., Paul found the highest incidence of rheumatic fever in the two wettest districts investigated (*Tr. A. Am. Physicians* 55:290, 1940).

Faced with such conflicting and unsatisfactory data, those who would plan wisely the erection of an institution for the aged and infirm, who, chiefly because of their age, are subject to certain forms of rheumatism, will have to be guided by factors other than the proximity of a river. Are the inmates with "rheumatism" in the majority? Would it be cheaper to buy a new location away from damp and cold and build thereon a building without special air, temperature and humidity control, or would it be better to rebuild on grounds already owned (and perhaps conveniently situated) modern buildings in which an "artificial climate," suitable for rheumatic patients, can be provided by modern methods of house conditioning?

Since the problem in this particular institution seems to be a rather serious one which involves wise planning for the future, and since the new institution is not to be built for several years, it would appear that an excellent opportunity is afforded for a comprehensive and yet not too laborious study to be made relating the patients' voluntarily expressed symptoms with changes of humidity, temperature and barometric pressure. It is suggested that appropriate and not necessarily costly weather apparatus be set up in the hospital, that daily records of changes be kept (temperature, humidity, barometric pressure, atmospheric electricity) and that they be correlated with such data on aggravated symptoms and signs of rheumatism (including changes in blood sedimentation rates) as patients may exhibit through several changing seasons. This would constitute a valuable contribution to science and represent a far sighted use of public funds.

INJECTION SOLUTIONS FOR HERNIA

To the Editor:—I am using 10 per cent phenol in equal parts of glycerin and water to inject into hernias, using 2 to 5 cc. per injection. My problem is whether this material would be harmful if accidentally injected into the blood stream. Is this solution effective? What solution would you advise as being superior to the one I am using? M.D., New Jersey.

ANSWER:—Solutions of phenol in the concentration described are extremely dangerous for use in the injection treatment of hernia. Many of the accidents of the injection treatment have been due to necrosis caused by varying strengths of phenol solution. Effective sclerosing solutions which do not contain phenol are on the market and consist principally of tannic acid or of sodium salts of certain fatty acids. Many also contain benzyl alcohol as an anesthetic agent. No preparation for use in the injection treatment of hernia has been recognized by the Council on Pharmacy and Chemistry because insufficient follow-up experience in the application of such a preparation has been gained. In a report (*The Present Status of Injection Treatment of Hernia*, *THE JOURNAL*, Aug. 17, 1940, p. 533) the Council pointed out that the injection method involves less danger of serious complications than does surgery only when employed in selected cases of hernia by those skilled in the injection of suitably standardized solutions of known composition and action. Apparently none of the proprietary preparations on the market are sufficiently well standardized to insure uniformity of composition and activity and should therefore be used only with full cognizance of the dangers involved. Reports in the literature indicate that of the available preparations those consisting of a solution of the sodium salt of certain fatty acids are perhaps less dangerous than those which contain more powerful sclerosing agents.

SULFATHIAZOLE FOR NASAL SPRAY AND SINUSITIS

To the Editor:—I have been using 5 per cent sulfathiazole in distilled water as a nasal spray in chronic sinusitis and upper respiratory infections. Despite using a nonmetallic atomizer (DeVilbiss number 251) and keeping the solution away from the light in a dark glass bottle, I find that this solution becomes dark in a few days and a bit irritating. Can you tell me any method of increasing the stability (it has been suggested to me that by slightly acidifying the solution or keeping it in the icebox this can be done)? When the solution becomes discolored is it less active or more toxic? Are there any contraindications to the use of the fresh solution as a nasopharyngeal spray?

M.D., Pennsylvania.

ANSWER:—It is assumed that the inquirer is referring to a 5 per cent solution of sodium sulfathiazole in distilled water, because sulfathiazole is not soluble to the extent of 5 per cent. If this assumption is correct, then any attempt to acidify slightly the solution of the sodium salt would result in the precipitation of sulfathiazole from the solution when the point of neutrality was reached and, as the solution was made acid, the drug would tend to go into solution again. For that reason it would not be practical to increase the stability of the solution of the sodium salt of sulfathiazole by acidifying it. Discolored solutions of the sulfonamide drugs should never be used, because it means that chemical changes have taken place in the drug which, under certain conditions, render it less active and possibly more toxic.

